DOCUMENT RESUME

ED 246 906 IR 050 791

AUTHOR	Taylor, Hugh A.
TITLE	Archival Services and the Concept of the User: A RAMP Study.
INSTITUTION	United Nations Educational, Scientific and Cultural Organization, Paris (France). General Information Programme.
REPORT NO	PGI-84/WS/5
PUB DATE	84
NOTE	108p.
PUB TYPE	Information Analyses (070) -- Viewpoints (120) -- Reports - Evaluative/Feasibility (142)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	*Archives; Futures (of Society); Information Networks; Information Scientists; Library Science; Literature Reviews; Professional Education; *Research and Development; Surveys; *Technological Advancement; *User Satisfaction (Information); Use Studies
IDENTIFIERS	*Archivists; User Needs; *Users

ABSTRACT

Prepared under contract with the International Council on Archives (ICA), this study is intended to assist archivists and information specialists in creating, developing, and evaluating modern archival systems and services, particularly with reference to the concept and the role of the user in such systems and services. It ranges over a wide field in an attempt to place archival services and the user within the context of available communication techniques and analogous developments for library science. The archival profession is in need of its own user studies and it is hoped that this preliminary survey of themes in the literature will not only be of some immediate practical value, but also will generate specific, scientific research on the subject. Ten broad topics are covered: (1) the nature of the problem; (2) information, the user, and the universe of knowledge; (3) user needs and user behavior; (4) the prelude to service--surveys, appraisal, acquisition; (5) the user in the search room--improving manual systems; (6) machine readable archives; (7) automation in the search room; (8) networks; (9) beyond the search room--extension services; and (10) the user and the future--education, research and development. A bibliography is also provided. (DMC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

Original: English

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

PGI-84/WS/5
PARIS, 1984

ED246906

ARCHIVAL SERVICES AND THE CONCEPT OF THE USER:

A RAMP STUDY

prepared by

Hugh A. Taylor

General Information Programme and UNISIST

United Nations Educational,
Scientific and Cultural Organization

IR050791

Reproduced by permission of
Unesco

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

C. Coudert-Schklowski

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Recommended catalogue entry:

Taylor, Hugh A.
Archival services and the concept of the user:
a RAMP study/prepared by Hugh A. Taylor /for the/
General Information Programme and UNISIST - Paris:
Unesco, 1984 - iii, 98 p.; 30 cm. - (PGI-84/WS/5)

I - Title
II - Unesco General Information Programme and UNISIST
III - Records and Archives Management Programme (RAMP)

Unesco, 1984

PREFACE

The Division of the General Information Programme of Unesco, to help meet the needs of Member States, particularly developing countries, in the specialized areas of records management and archives administration, has developed a long-term Records and Archives Management Programme - RAMP.

The basic elements of the RAMP programme reflect the overall themes of the General Information Programme. RAMP thus includes projects, studies, and other activities intended to :

1. Promote the formulation of information policies and plans (national, regional and international).
2. Promote and disseminate methods, norms and standards for information handling.
3. Contribute to the development of information infrastructures.
4. Contribute to the development of specialized information systems in the fields of education, culture and communication, and the natural and social sciences.
5. Promote the training and education of specialists in and users of information.

The present study, prepared under contract with the International Council on Archives - ICA - is intended to assist archivists and then information specialists in creating, developing and evaluating modern archival systems and services, particularly with reference to the concept and the role of the user in such systems and services.

Comments and suggestions regarding the study are welcomed and should be addressed to the Division of the General Information Programme, UNESCO, 7 place de Fontenoy, 75700 Paris. Other studies prepared under the RAMP programme, a list of which is appended to this study, may also be obtained from the same address.

CONTENTS

Page

Foreword iii

1. THE NATURE OF THE PROBLEM 1 - 11

  1.1 The need to communicate in a fragile environment 1
  1.2 The increasing awareness of archives as heritage 2
  1.3 The media of record and the archivist's role 3
  1.4 The evolution of archives 8

2. INFORMATION, THE USER AND THE UNIVERSE OF KNOWLEDGE 12 - 20

  2.1 The nature of information 12
  2.2 Retrieval and the human brain 15
  2.3 The universe of knowledge and the scientific approach 16
  2.4 The archivist's dilemma 17
  2.5 The use of information 18

3. USER NEEDS AND USER BEHAVIOUR 21 - 36

  3.1 Fundamental needs 21
  3.2 The subjective aspect of research 23
  3.3 The response of the archivist to user behaviour 24
  3.4 The response of the librarian to user behaviour 27
  3.5 Administrators and archivists as users 29
  3.6 Access and the archivist 33

4. THE PRELUDE TO SERVICE: SURVEYS, APPRAISAL, ACQUISITION 37 - 42

  4.1 Surveys 37
  4.2 Appraisal 38
  4.3 Acquisition 39

Page

5. THE USER IN THE SEARCH ROOM: IMPROVING MANUAL SYSTEMS 43 - 49

5.1 The traditional archival repository 43
5.2 Avenues for improvement 45
5.3 "Total archives" 47
5.4 Photographs 50
5.5 Film, sound 53
5.6 Paintings, drawings, prints, maps 55

6. MACHINE READABLE ARCHIVES 60 - 70

6.1 Challenges to the user 60
6.2 Challenges to the archivist 66

7. AUTOMATION IN THE SEARCH ROOM 71 - 79

7.1 The need for automation 71
7.2 Benefits for the researcher 73
7.3 Benefits for the archivist 74
7.4 The implications for standardization 75
7.5 Relationships with automated library systems 77

8. NETWORKS 80 - 83

8.1 Origins 80
8.2 Types 80

9. BEYOND THE SEARCH ROOM: EXTENSION SERVICES 84 - 86

9.1 Attitudes 84
9.2 Definition and scope 84

10. THE USER AND THE FUTURE: EDUCATION, RESEARCH AND DEVELOPMENT 87 - 89

10.1 Education 87
10.2 Research and development 88

BIBLIOGRAPHY 90

FOREWORD

This study by its very nature has had to range over a wide field in an attempt to place archival services and the user within the context of available communication techniques and analogous developments for library science.

I have tried to deal with the salient themes presently being discussed in the literature in such a way they may be considered as a whole and in a close relationship with each other. The archival profession is in serious need of its own user studies and my hope is that this preliminary survey will not only be of some immediate practical value, but also will generate specific and scientifically respectable research on the subject. My principal regret is that this study has been restricted almost entirely to sources in English, largely on account of my own shortcomings in other languages.

I am particuarly grateful to Dr. Frank B. Evans for his guidance and to Michael Cook of Liverpool University, and Michael Roper of the Public Record Office, London, who also read the draft manuscript and offered most helpful suggestions.

Hugh A. Taylor

1. THE NATURE OF THE PROBLEM

1.1 The need to communicate in a fragile environment

1.1.1 The surface of planet Earth is much more fragile than we once believed it to be. Exploitation of the natural environment has placed us in a position of grave ecological peril. The strictly human environment has been destabilized by the destruction of life on a massive scale and by the increasing disparity between rich and poor. Add to this the threat of our annihilation, which at present shows little sign of diminishing. Unlike the animal world our will to survive as a species is not instinctive; we are all creatures who must depend on our cultural mores and institutions for continued existence and we must constantly seek to actualize ourselves through them if we are to avoid disaster. There are, however, signs of awareness and movements that could lead to a more stable world provided we can survive and transcend changes in our values, priorities, the way we see ourselves and the way we communicate. At the heart of the problem lies the need to communicate more fully, not only in words and gestures but through all our senses and communications technology, which is the extension of ourselves.

1.1.2 As archivists we should not see ourselves as working in isolation serving small esoteric "publics", but as part of a cultural environment upon which humanity depends for survival. Culture is a term which almost defies definition, but it may be understood in this context as that which makes us more complete and better able to interact fully with others in our "global village".

1.1.3 To succeed in our role as keepers of the record, we must above all be communicators, not in the limited sense of advocating a point of view or improving our public image (although this may at times be necessary); rather it stems from the awesome task of transmitting the collective memory from one generation to the next, increasing the capacity for recall, and loading this memory with those resources worthy of permanent preservation which is perhaps the most difficult task of all. We can best grasp the value of our work if we imagine an organism with the power to destroy all records in all media, including print. The result would probably be massive amnesia leading to insanity, so heavily do we rely on the artifacts which make up our media of record for all that we have become and as points of reference in the future.

1.1.4 Along with our colleagues in libraries, museums, art galleries and those working on historic sites, we are well aware that our whole cultural environment as it relates to times past is also fragile in the physical sense and, therefore, in the social sense too. Acids as by-products of industrial process and waste have accelerated the destruction of stone, paper and other materials, so that the location of records, books and other artifacts in repositories will not alone guarantee their survival. Add to this, destruction through ignorance, wars, violence and natural calamities and it is a wonder we have not lost more.

1.2 The increasing awareness of archives as heritage

1.2.1 Documents have long been valued as a source for the historian and for traditional scholarship, but there is a profound and rapidly growing sense of the value, at the local level, of movable artifacts and natural phenomena from the past remaining at or close to their point of creation as a positive cultural good, with which the term "cultural goods" is closely associated, and as part of a more holistic appreciation of locality and period which involves not only reading about the past but, in some measure, experiencing the past in the present.

1.2.2 This movement is of immense importance to archivists, as it rapidly opens up avenues of use with no end in sight. At the same time the search for family roots, whether it is related to a subconscious dread of extinction or the growing sense of the human family as an aggregate of clans and tribes in the pre-literate sense, has already changed the face of archival service as we respond to the growing demands of genealogy. The linking of personal and family history with the heritage movement will have far-reaching results, as we come to work more closely with our colleagues in the other curatorial professions and increase popular assent to our existence, from which much financial support indirectly derives. All this helps to move us into the centre of social organizations where, as keepers of the collective memory, we once were.

1.3 The media of record and the archivists' role

1.3.1 When we trace the growth of our profession we tend to limit ourselves to the last two centuries in Europe, yet if we are to realize our full potential it may be helpful to examine the practice of record keeping within a global setting and across time.

1.3.2 We like to think of ourselves as one of the oldest professions, and we should therefore consider how we have evolved with the changing media of record which have been placed in our care over the millenia, and how we and the records themselves have influenced our users. We may find that the situations we experience today may have precedents in the past which will help us find our way forward into the future.

1.3.3 This study is concerned with user services and there is, of course, a sense in which every task we perform is a service to the user, directly or indirectly. Without users (which include ourselves) records and the information they contain have only a potential, a pent up "energy" which is released through the dynamic interaction of human involvement with:

(a) the "carrier", such as parchment, paper or magnetic tape;

(b) the configuration and form of the symbols (cuneiform, pictogram or phonetic alphabet);

(c) the information itself generally defined as "content".

1.3.4 All three elements have had a considerable bearing on the role of the archivist through the centuries as keeper of the record, and if we are to communicate fully with our users we should understand the effects of modes of communication which is part of the message since all messages are designed to produce effects of one kind or another (1).

1.3.5 For non-literate communities, the past is constantly renewed and celebrated through the recreation of tribal myths and legends as part of a collective wisdom, communicated in part by the shaman, through which they learn abiding truths about themselves. There is no linear sense of increasingly remote time or historical development or advance which has a way of fragmenting cultural experience in literate societies. Customary duties and rites are transmitted through oral tradition; the heritage of the tribe resides in the totality of its life and skills, rooted in its land and natural resources. There may be a message here for us as we move into a post-literate age which is not shaped to the same extent as in the past by text and the tyranny of the word. We and our users are beginning to grapple with a wide range of media whose interpretation will make a "literal reading" inappropriate, as in photographs (2).

1.3.6 Our literacy has had a profound effect on the way we communicate (3), and this is important to archivists and librarians alike as the custodians of literate communication. Such insights may help us with our understanding of the way in which we perceive the record and may be seen as an extension of the study of diplomatic as the form in which information is conveyed in textual archives. There are, for example, some interesting parallels in forms of record subsequent to the manuscript and printed book which deserve study by archivists. Clay tablets were not written but stamped as with a typewriter; reels of microfilm echo rolled parchment documents and audio tape, with some similar problems for retrieval.

1.3.7 A good case has been made for the impact of the materials of media of record on the organization of society (4) and hence on the users; this can provide archivists with insights into the dynamics of bureaucracy for which the records provide the evidence. Papyrus and paper, for instance, could be moved with speed and accuracy over long distances, favouring highly centralized civil administration and military operations. Finally, the media of communication through the record has a complex impact on our senses which is not fully understood. The use of the phonetic alphabet to convey information probably had an impact on the senses which is once more changing as we surround ourselves as archivists with visual images that we seek to interpret correctly to ourselves and to the user. At the same time, the lineality of print and the exact repeatability of lines by means of the printing press has helped shape our concepts of science, perspective and, not least, our perception of history. This is a vast subject which cannot be developed here, but has a considerable bearing on our modes of approaching information retrieval in a post-literate age as we strive to supplement textual literacy with an understanding of the image and of pattern recognition.

1.3.8 Textual literacy is only part of our inheritance, for we are heirs to the surviving output of all communication systems. Our mandate has come to extend over the records not only of public bureaucracies and families, but of every facet of society, the recent past and (through records management) the foreseeable future.

1.3.9 For one medium alone we have gathered in a paper mountain, itself only a fragment of the total output of public or private bureaucracy generated during the industrial age in which the repetitive format of ledger, letterbook and box file parodies the mass production and fragmentation of the assembly line. We also collect pictures, photographs, maps, film and our traditional record keeping role has been shaped both by the media of the records described above and the media of communication (pictogram, ideogram, phonetic alphabet, manuscript or printed page with all their attendant iconography). Add to all this the output of radio, T.V., the computer and the satellite, which can be recorded more or less permanently; no wonder that appraisal and selection pose tremendous problems. At present the sheer cost of preservation imposes its own constraints and prevents us being drowned in a sea of record. But more and more is being generated and preserved at relatively less cost, and we are fast approaching an age when information becomes the principal staple and we will perhaps achieve our professional apotheosis.

1.3.10 It has been said that automation is so instantaneous that it has become an extension of our nervous system. We are already coming to realize that retrieval systems based on forms of textual description and indexing, which once worked only reasonably well at best, are rapidly becoming incapable of meeting the new demands of scholarship. In the age of the computer we are entering a period of global "tribalism" in the sense that as individuals we are learning to relate to ourselves and our environment in depth, and this is reflected in the study of non-elites, quantification, and other departures from the narrative of prominent people (usually men) and events. Administrations are being decentralized and the rapid availability of wisdom and information is being returned to individuals and small groups via the computer terminal operating increasingly in an interactive, "oral" mode requiring quite different techniques. Marshall McLuhan has pointed out that:

> In writing, the tendency is to isolate an aspect of some matter and to direct steady attention upon that aspect. In dialogue there is an equally natural interplay of multiple aspects of any matter. This interplay of aspects can generate insights or discovery. By contrast, a point of view is merely a way of looking at something. But an insight is the sudden awareness of a complex process of interaction. An insight is a contact with the life of forms. Students of computer programming have had to learn how to approach all knowledge structurally.

> In order to transfer any kind of knowledge to tapes, it is necessary to understand the form of that knowledge. This has led to the discovery of the basic difference between classified knowledge and pattern recognition (5).

1.3.11 As archivists we have tried to avoid the worst excesses of inappropriate classification, and our increasing involvement in non-textual media challenges our linear acculturation and academic training. We are constantly involved in the mosaic of surviving documents and the web of information spanning them. We seek not an artifically imposed classification by subject, but authentic "pattern recognition" in organic archival order insofar as this is appropriate or possible. Working with the material in this way gives us unique insights which we strive to pass on to the user through description and indexing in all its forms. According to McLuhan:

> When any situation becomes overcharged with data, the details fall away and the pattern of interrelationships that the provide emerges starkly. This is one of the dynamics of 'Breakdown as Breakthrough' (6).

1.3.12 This is a rather typical example of McLuhan disguising a probe as a fact; the reality is not so simple. Professor Theall makes it clear that:

> Information is not non-specialist. No matter how general the processes of programming and the way in which material is stored in a computer, it only goes there by the provision of the material from a variety of specialized sources. It could be argued that information only becomes relevant to the extent that it is differentiated, specialized material, for without differentiation there is no communication and no learning. McLuhan makes his notion of integration through information too amorphous by attending only to the fact that information in the broadest sense is a highly abstract and generalized notion with an abstract and generalized technology governing it. But the kind of information that is overpowering society is the huge quantity of specific detail that must be controlled and understood (7).

1.3.13 This lies at the heart of the tension between the archivist and the user, between the "provenance" method of search using the pattern of original order as the basis for a search strategy and retrieval through highly specific subject indexing (8).

1.4 The evolution of archives

1.4.1 Before discussing archival services and the user in our so-called post-industrial society of today, it may be helpful to consider the role of the keeper of the record from origins in the Ancient World, when society and services were not fragmented by the domination of scientific rationalism and industrial progress. Most importantly, the concept of the library as a repository for literature and writings about human transactions and other aspects of knowledge over against archives as containing the records of the transactions themselves did not appear to exist (9), partly because their contents were all in manuscript and partly because history as a branch of learning based on the written record with its elusive search for definitive statements of what actually happened had not yet evolved. There existed a highly developed tradition of repositories in support of bureaucracies with the creators as the principal users, and these records were probably used by the public also in the way that land registries, for instance, are used today, but insofar as the temple might also be a palace, a fortress, a commercial undertaking and the seat of government, its library reflected its interests in what we would now call library and archival materials. Whether the art of writing stabilized religion or vice versa can be argued, but the keeper of the records was the custodian not only of information but more importantly of wisdom. Through his literacy, he was able to convey the contents of books and records and in consequence remained central to the administration. He probably devised the form of the administrative record within the household of the priest kings. The role of keeper as both custodian and administrator at the seat of power continued for centuries, until, with the onrush of scientific "enlightenment", the past became synonymous with darkness.

1.4.2 Ironically, the modern archival profession emerged from the edicts of the French Revolution, which finally sundered the past from the present and in a sense reduced the keeper of the records to become the servant of the historian. This will always be an important part of our work, but we must equip ourselves for much more if we are to realize our full potential by becoming literate in all media of record, as we seek to regain our place at the heart of administrative and information systems where increasingly decisions on the permanent retention of the automated record and its most effective form must be made at the time of creation if it is to survive. By equipping ourselves in this way, we will become consultants as well as custodians, valued for our knowledge not only of the records of the past, but of the nature, limitations and impact of records during their life cycle.

1.4.3 The elements of these ancient libraries deserve careful scrutiny in the light of renewed cooperation between archivists and librarians. The art of writing enabled oral tradition to be codified and recorded and thereby in time weakened the power of oral tradition. Literacy helped to standardize knowledge and correct texts became available in official libraries. The form, size and material of the record also became standardized to some extent based on functional convenience, until the emergence of the codex gradually surplanted the roll. Clay tablets were often tagged with a reference prior to use. Standards imposed and recorded at the point of creation are of immense value to user and custodian alike, and this is particularly true of machine readable records.

1.4.4 The libraries of the Ancient World were large and well-used with materials arranged in a general way by subject matter; well-used shelf lists testify to effective finding aids in the form of descriptive bibliography (10). It appears that classification was not so rigid or detailed as to destroy the organic nature of archival materials. Under the keeper of the records archives and literature co-existed in a manner well suited to the society of the time. During the Sumerian, Babylonian and Assyrian civilizations, "few periods in the history of western man so well demonstrate the cultural role of the graphic arts of communication and the practical value of well-organized archives and libraries" (11).

1.4.5 In recent centuries the printed book divided us from our colleagues, the librarians, whose libraries grew apace and often overshadowed our archival repositories. This has at time set us at odds, but it is now clear that far more unites us than divides us, and we should in future pay close heed to each other as we endeavour to serve the user, drawing on our separate traditions for joint or similar solutions especially to the problems of non-textual material with which we have most in common.

1.4.6 The purpose of this paper is to explore these possibilities as we endeavour to restore the essentially holistic approach to wisdom, knowledge, and information practiced by our distant ancestors (12).

Notes

1. Hugh A. Taylor, The Media of Record: Archives in the Wake of McLuhan, Atlanta, Georgia Archive, vol.6, no.1, 1978, pp. 1-10.
2. Marshall McLuhan, Understanding Media: the Extensions of Man, New York, McGraw-Hill, 1964, 359 p.
3. Marshall McLuhan, The Gutenberg Galaxy: the Making of Typographical Man, Toronto, University of Toronto Press, 1969, 293 p.
4. Harold A. Innis, The Bias of Communication, Foreword by Marshall McLuhan, Toronto, University of Toronto Press, 1971, 226 p.

5. Innis, *op. cit.*, p.ix.

6. McLuhan, *The Gutenberg Galaxy*, p.7.

7. Donald F. Theall, *The Medium is the Rear View Mirror*, Montreal, McGill-Queens University Press, 1971, p.xv.

8. Richard H. Lytle, Intellectual Access to Archives: 1. Provenance and Content Indexing Methods of Subject Retrieval, *American Archivist*, vol.33, no.1, 1980, pp. 64-75.
   Richard H. Lytle, Intellectual Access to Archives: 2. Report of an Experiment comparing Provenance and Catalogue Indexing Methods of Subject Retrieval, *American Archivist*. vol.43, no.2, 1981, pp. 191-207.

9. Elmer D. Johnson, *History of Libraries in the Western World*, Metuchen, N.J., 2nd edition, 1976, 354 p.
   Elmer D. Johnson, *Communication: an Introduction to the History of Writing, Printing, Books and Libraries*, 4th edition, Metuchen, N.J., The Scarecrow Press Inc., 1973, 304 p.

10. James Thompson, *A History of the Principles of Libarianship*, London, Clive Bingley, 1977, 236 p.

11. Johnson, *History of Libraries*, p.30.

12. For some deeply reflective statements on the profession of archivist, which also include relationships with the user, see Dr. Felix Hull's presidential addresses to the Society of Archivists, 1978-83, listed in the Bibliography.
    For an overview of user research in libraries, see G. Ford ed., *User Studies: an Introductory Guide and Select Bibliography*, CRUS occasional paper 1, University of Sheffield, 1977, 92 p.
    In addition, proceedings of the 1980 International Council on Archives was devoted mainly to the uses of archives, and these have been published in *Archivum*, vol.29, 1982.

2. INFORMATION, THE USER AND THE UNIVERSE OF KNOWLEDGE

2.1 The nature of information

2.1.1 We use the word "information" so freely that we tend to take its meaning for granted. Anthony Debons has written:

> We talk about information in one sense as if it were a noun - a thing we are able to buy, sell, acquire, use, and in another breath we discuss it as a verb, something we do - get information, develop information ... I am inclined to think of information as both a process and a commodity, with the two being represented by different but interrelated laws. (1)

2.1.2 I believe that in our profession we have been more or less aware of these two aspects for some time. However good index cards may be in their description of a piece of information, these entries by their very nature are very limited in what they can say. They can never replace the archivist constantly feeding the process of information gathering, while at the same time understanding the complex nature and relationship of sources which can never be wholly expressed by the written word. Increasingly, computers are able to handle these relationships, but we should never sell short the human mind which is infinitely more subtle. In discussing systems, we are not just dealing with lists and index cards, but with reference archivists whose quality and knowledge may totally transcend our material "finding aids" to such an extent that they can become a source of great strength to a repository, and also some weakness in that they are mortal and will one day retire.

2.1.3 Jean Piaget, in his study of the education of children, has usefully distinguished between operative and figurative knowing, which may be of value when we consider finding aid systems. Operative knowing is concerned with all kinds of skills, such as knowing how to walk, knowing how to interpret social rules, knowing how to write and think historically. The extent to which our users possess this kind of information has a direct bearing on the extent to which they can increase their figurative knowledge, which is "information as a coded fact" familiar to all users of finding aids.

2.1.4 It is possible that we are expecting our finding aids to do more than they are capable by assuming that an endless proliferation of figurative information is all that is necessary. According to Hans Furth:

> ... the traditional emphasis on the symbolic medium as the carrier of knowledge may easily miss the essential point on which all knowledge rests, namely the operative aspect. Operative knowing basically is not dependent on any specific figurative or symbolic input; whereas the comprehension of any specific symbolic or non-symbolic content is always dependent on the operative capacities to which a person assimilates this content (2).

2.1.5 Let us take our theoretical consideration of information a little further. We may think of it as a form of energy lighting up relationships between persons, places and subjects ("throwing light on" is, after all, a very familiar phrase). Klaus Otten perceives three classes of information:

(1) Structural information which is coded (linguistically and otherwise) and classified. The card index is an excellent example.

(2) Probabilistic information is the act of communication between persons, or persons and finding aids, (or even when computers "talk" to each other?). To what extent is the structural information conveyed?

(3) Semantic information is concerned with the whole context of the information being conveyed and the assumptions made in setting up the system in the first place. We assume that information is assimilated in certain ways based on earlier systems of communication. What are they? This becomes clearer when we compare the inventory with the index as a finding aid. The contextual information conveyed in the inventory is likely to be much higher, although the structural information may well be less. In a more general sense, "the user's value system becomes superimposed on semi-arbitrarily assigned correspondences between symbol structures and meaning" (3).

2.1.6 These varieties of information are present not only in our finding aids but equally in the documents to which they refer, and we must further recognize that "three operations are performed on information: storage, transmission and decision-making". In archival terms, this consists of the appraisal and retention of the original document, the manner in which we retrieve the contents (which nowadays need not be with the naked eye) and, most important from the point of view of finding aids, the "decision-making" or processing. How will the information contained in this document be conveyed in a selective, condensed and abbreviated form? This requires crucial decisions by the archivist if the result does not end in distortion.

2.1.7 Discussion of cultural background to archives, libraries, the media of record and means of communication reveals that the capture of relevant information by a user is an extremely complex process. We have seen that the medium itself communicates its own message, for instance, if it is a heritage artifact strongly emotive of its period or simply because it is pictorial rather than textual in form. Then, there is the confrontation of the user with the contents of a requested book or document where the experience of one person will differ from that of another in the way that two witnesses observe a traffic accident differently.

2.1.8 These experiences will vary with the training and background of the user and the purpose to which the information will be put. Again, to what extent was the item relevant? Were the needs of the user fully met? Because of all these variables and because in a sense content does not exist prior to use, it might be said that "the user of any medium is its content", which will vary from person to person. To sum up, "the message of any human communication process is the totality of its effects, material, mental or social, whether intended or not" (4).

We cannot accept the transportation theory of communication (5) whereby information is simply the matching of signals sent and received. A broadcast in a language unfamiliar to the listener would be equally unintelligible whether the reception was good or bad. A letter may fail to convey the emotions felt by the writer.

2.2 Retrieval and the human brain

2.2.1 What are at odds are the left and right hemispheres of the brain, where the left sets visual space in a hard-edged frame with centres and fixed boundaries within which processes are logical, analytic and linear, as in the process of classification, indexing and the logical search for solutions; the right hand brain comprehends acoustic space without centres or margins, where perceptions are holistic, symbolic, intuitive and creative embracing abstract patterns and complex figures, the kinds which often come from browsing or simply daydreaming.

2.2.2 Our retrival systems, such as they are, have hitherto relied heavily on the skills developed by the left side of the brain, whereas we should try to allow increasingly on the involvement of the right. This can be expressed verbally in sophisticated language behaviour presently beyond the powers of the computer. Hence the call for "a formal base plus an overlay of experience gained in interaction with the cooperative verbal community" (6). The scientist seeks for a precise meaning for each word, whereas most humanists use the natural language in all its fullness and associated meanings. At the farthest extreme are the poets whose words may have broad and extensive overtones.

2.2.3 Perhaps this has helped in some measure to indicate why the quest for relevant information can be so elusive. In contrast to archivists who have tended to emphasize the custodial aspects of their work and to build retrieval systems around provenance and organic order, librarians with their more developed service orientation have a considerable literature on user studies which deserve careful examination by archivists in their search for solutions, but even so, hard data on users' strategies and behaviour patterns is still very limited and is linked with inconsistent definition of information. T.D. Wilson puts it this way:

> The problem seems to lie not so much with the lack of a single definition as with a failure to use a definition appropriate to the level and purpose of the investigation. The word "information" is used in the context of user studies research to denote a physical entity or phenomenon (as in the case of questions relating to the number of books read in a period of time, the number of journals subscribed to, etc.), the channel of communication through which messages are transferred (as when we speak of oral or written information), or the factual data empirically determined and presented in a document or transmitted orally (7), as facts, advice or opinion.

This is a valuable warning which should be heeded by archivists undertaking such studies.

2.3 The universe of knowledge and the scientific approach

2.3.1 The fundamental endeavour of scientists and scholars has been to build and add to a coherent body of knowledge which transcends the resources of individual libraries and involves the contextual relation of knowledge itself. To meet this need, libraries have grown and specialized without a great deal of extensive planning and some librarians have advocated access to recorded information through a methodology of problem solving techniques using scientific models (8). This involves:

1. Identification of the problem.
2. Analysis of present solutions.
3. Uncovering obstacles to improvement.
4. Devising and testing new solutions, which in turn give rise to new problems.

2.3.2 The whole process presupposes an autonomous, objective body of coherent knowledge built up through time in the manner of a body of law. This approach borrows from a particular philosophy of science which claims that we gain a knowledge of the world by solving the problems it poses, by making guesses and eliminating errors, by matching conjecture with reality. There is no finality about this. The approach to truth is asymptotic; it is never quite matched, but the result is a realistic approximation. Scientists enter into public corporate activity through publication, criticism and new theories.

2.4 The Archivist's dilemma

2.4.1 Archivists will identify readily with this approach, but our difficulties are compounded by the nature of our holdings. We endeavour to build a coherent body of knowledge through information gathered in the course of our work for the better understanding of our finding aids, and this is often linked to books, articles, footnotes and citations of historians and others in an approach which may be accessed at least in some degree through bibliographic retrieval systems. But, in addition, there is a vast body of information which our finding aids have failed to capture and an even vaster chaos of information potentially available through techniques of appraisal and strategies of acquisition. All this is only the raw material for "a coherent body of knowledge" and is, therefore, quite unlike most library materials.

2.4.2 Librarians would argue that they too have failed to capture information for want of appropriate search strategies and analytics, but there is (or should be) a coherence about the contents of a book written about human transactions which is absent from a series of records, in particular files of general correspondence concerned with the transactions themselves in the sense of a "body of knowledge" as opposed to organized information.

2.4.3 Likewise, most materials that are published or only printed have some kind of identity through their author or title which makes acquisition or at least location reasonably easy in most cases. What is printed is intended to be read by others and will make some impact on society accordingly. Almost all that is in manuscript was never so intended and must be located. Until archivists have arranged and described their acquisitions and made this information publicly available through the rather limited means presently at their disposal, their use for building a coherent body of knowledge is also limited. In addition, we do not have a clear picture of what is still "out there" in private possession.

2.4.4 What exists in the hands of archivists is for the most part an organized body of record and recorded experience. As soon as a user reacts with this material, the user becomes the contents and the resulting body of knowledge will be a matter of perception. Interpretation enters in as it does when applying a body of statute law.

2.4.5 This lack of coherence makes retrieval an infinitely more complex problem for the archivist, but the techniques of trial and error could be the basis for part of a sound methodology instead of reliance on a rather haphazard approach as is the case with most of us at present.

2.5 The use of information

2.5.1 It has also been pointed out (9) that intended use has a greater bearing on the information required than the user's discipline. Studies in the field of Scientific and Technical Information has shown that STI, for the scientist, means organized knowledge, part of the coherent body of knowledge, for the technician it means applied knowledge, and for the information specialist it may only mean facts to be provided with litte account given to the need or the problem of use. Again, concepts of value can affect the meaning of key phrases. "Hands on" access to information requires all pertinent originals for the researcher, digests of points of view for the planner, and abstracts and references for the information operator.

2.5.2 These differing value systems, as they apply to different users of the same material, deserve further exploration by archivists in terms of levels of detail which archivists articulate in their finding aids. Consideration should be given not only to the professions and disciplines of users, but also to their functions and roles. Information processing will be understood differently in government, business and academia, because their assumptions are different. To what extent can we meet the requirements of such highly differentiated publics?

2.5.3 Again, quality has to be recognized as an independent variable: how accurate and appropriate is the information provided in our finding aids? A great deal of energy is expended in the rejection process as information is communicated from one group of users to another. Archivists as users experience this when they appraise public records or acquire one collection rather than another in the private sector and in the way we select information for inclusion in finding aids.

2.5.4 High levels of effective selection and inclusive statement may reach more people and this may be a factor in evaluating the selective process. However, if effectiveness is not achieved and the finding aid falls short of requirements, the user must spend time "upgrading the product to the level needed for action." Bias and consistent, logical omission of information should be clearly stated in a finding aid so that the researcher may be warned in advance.

2.5.5 Because the user is a complex person, the relationship to information will be multidimensional. In Homer Hall's words: "When dichotomy flourishes over-simplification tries to deny the right to be different". We need to know as much as is reasonably possible about users and not just their areas of immediate interest. We should also give more thought to potential users when we construct our finding aids. Who are they for? Must one finding aid serve all kinds of user? The increase in aids designed specifically for the genealogist is a sign of the times (10).

Notes

1. Anthony Debons, ed. *Information Science: Search for Identity*, New York, Harcourt, Bruce, Jovanovich, 1972, p.13.
2. Debons, *op. cit.*, p.25.
3. Debons, *op. cit.*, p.99.
4. Barrington Nevitt, *Archivist and Comprehensivist*, unpublished paper, read to the Association of Canadian Archivists in 1978, p.2.
5. Claude E. Shannon and Warren Weaver, *The Mathematical Theory of Communication*, Urbana, University of Illinois Press, 1949, 117 p.
6. J.C.R. Licklider, *Libraries of the Future*, Cambridge, Mass., M.I.T. Press, 1965, p.205.
7. T.D. Wilson, On User Studies and Information Needs, *Journal of Documentation*, vol.37, no.1, 1981, p.3.
8. Don R. Swanson, Libraries and the Growth of Knowledge, *Library Quarterly*, vol.49, 1979, pp. 3-25.
9. Homer J. Hall, Patterns in the Use of Information: The Right to be Different, *Journal of the American Society for Information Science*, March 1981, pp. 103-112.
10. However, in planning for the future, we cannot know precisely "(1) what society will be like; (2) what words will mean; (3) how people will act; (4) how people will view events". Allen Kent, "Insoluble problems", Debons, *op. cit.*, p.301.

3. USER NEEDS AND USER BEHAVIOUR

3.1 Fundamental needs

3.1.1 So far we have been considering and attempting to define a universe or body of knowledge and record which challenges librarians and archivists alike to maximize its use through all the available channels of information. We have seen that in a sense the user becomes the content through interaction and that users have different levels of requirement according to their disciplines, concepts of value and roles in society. Until users draw upon this body of record and knowledge, it cannot be said to be information in any dynamic sense; custodians down the centuries have sought both to preserve these resources and make them available at the same time. However, "making available" in terms of physical access must be distinguished from intellectual access and a measure of satisfaction for the user as needs are wholly or partially satisfied. What are these needs and to what extent is the custodian rather than the user responsible for their satisfaction?

3.1.2 In terms of the humanities and social sciences, user needs are above all human needs and it is essential that we perceive the problem as holistically as possible. In terms of our finding aids we often have to match requests for information with patterns of retrieval designed to have application and relevance to as many cohorts of users as possible. When the librarians of the Ancient World classified their collections, they began a tradition of ordering their resources in a manner that has survived to this day. Classification has been adaptable to the growth of knowledge and to this extent has been a powerful response to user demand in helping to narrow the field of search. But inevitably, classification has fragmented resources in a manner which is becoming less and less acceptable in our interdisciplinary world of learning and doing. In like manner users often tend to classify their "wants" into fragmented "shopping lists", whereas their true needs may only be identified from a greater understanding of the user as a person.

3.1.3 The satisfaction of general needs can be seen as a hierarchy of steps towards wholeness (1) and these may lie behind substantive enquiry. According to Maslow, our physiological needs must be met first and until they are, they will dominate our thoughts, as when we are constantly hungry. Our next higher needs are for safety and security, for order and for freedom from fear. Once fear is reduced, we can accept love and affection and we can react in a more trusting way towards others, at the same time feeling more secure in ourselves. Our self-esteem increases and we sense a growing esteem of others for us, resulting in a general feeling of self-confidence, strength and adequacy. This in turn leads to self-actualization and a genuine perception of who we are in all our uniqueness.

3.1.4 This summary of Maslow's position is grossly oversimplified; nevertheless there is a direct relevance for our understanding of users. The desire to know and to understand even for those who may have most of their basic needs met is dependent on those needs. Not a great deal is known about cognitive psychopathology, since a thirst for knowledge does not usually take the form of a neurotic cry for help, but the application of needs theory might be seen to apply to us as follows.

3.1.5 The basic need of all users unfamiliar with archival repositories is not necessarily the answer to a specific enquiry which could be quite tentative, but rather unspoken questions such as, "Is this the place to have my question answered?", "How should I communicate in this environment?", "Can I find my way around?", "How much am I supposed to know already?". Essentially, it is a need to know and understand the process. Once this need is satisfied, a sense of security is engendered by a clear and logical retrieval system, no matter how simple, with its catalogues, inventories and indexes suitably arranged. If the user can feel reasonably secure and confident in this environment in which diffidence (itself a form of fear) is expelled and the atmosphere is clearly non-threatening, then a more personal relationship can be established and the real needs of the researcher begin to emerge. As these are resolved, either through direct use of the finding aids or with the help of the staff, confidence and self-esteem are established, the staff appreciate the use and, in some small measure, self-actualization is advanced.

3.2 The subjective aspect of research

3.2.1 Once more emphasis is placed, in the first instance, on the basic needs of the individual as a person rather than on the enquiry, then the body of knowledge or record ceases to be a "scientifically" impersonal objective entity and becomes a resource which cannot be fully communicated apart from the user (which includes the archivist). In much the same way, Maslow has argued that science is neither autonomous nor self-regulating, but is essentially a creature and creation of the scientist arising from the following activities which closely resemble those of archivists and librarians, who also solve problems, ask questions, pursue intuition, formulate hypotheses, test, check and verify findings, seek to enlarge generalizations, devise methods and techniques and collect the history and records of the profession.

3.2.2 In short, "Science is only one means of access to knowledge of natural, social and psychological reality" (2). Patrick Wilson believes that, in spite of the subjective impact of the physical scientist, there is still a body of precisely determined physical constants, fundamental theories and laws in sharp contrast to the social and behavioural sciences, largely on account of the complexity of human beings. Motives, norms and social groups are constantly shifting in a way that cannot be counted and measured, and the classification of behaviour into, for instance, deviant and non-deviant behaviour leads to a highly subjective view of what is normal (3).

3.2.3 Wilson also suggests that it may be helpful to view much research in the social sciences (with the exception of economics) as a species of history, in which the social sciences are considered as current history in much the same way as history might be seen as retrospective cultural anthropology. In addition, much research in the earth sciences is descriptive and historical which, in turn, is related to geography and in particular human geography. There is, therefore, a very wide band of knowledge and on-going research which is:

1. Incomplete. There is no such finality as "definitive" history.
2. Inconclusive and in constant need of revision.
3. Contestible, since it relies on interpretation and a choice of perspectives (4).

3.2.4 What we are dealing with is, in effect, a work of art to produce an effect: the use of records and other sources of knowledge to produce a coherent rendering of human complexity through generalized statement that can be grasped and utilized by the reader.

3.3 The response of the archivist to user behaviour

3.3.1 Archivists need to know much more about the manner in which scholars in the above fields pursue their research and add to the universe of knowledge. We need a science of the growth of knowledge, an information science which would stand to storage and retrieval as physics stands to engineering (5).

3.3.2 As with other behavioural sciences, information science is still predominantly historical with a weak theoretical component, a cluster of concepts based on practical experience and this is particularly true of archives. However, an archival science that developed percepts out of the interface of research source media with interdisciplinary studies might lead us to create the effects we and the users require rather than constantly reacting to causes generated by the specific requirements of users. In so doing, we should be more concerned not only with what documents are about (in this way we react to users), but also what they may be useful for as part of the strategies for acquisition of original materials and copies and by providing critical as well as descriptive elements in finding aids.

3.3.3 We can now see that, if we except the physical sciences at their most objective and specific which do not generally concern us as archivists, the remaining band of what may be generally recognized as historical research presents many of the problems which face all humanist scholars who must increasingly rely on the corporate libraries and library systems to supplement their own collections of material (6). Just as in hard economic times, library acquisition policy must weight serials against monographs and retrospective against current materials, so archivists impose limitations on research through their records appraisal and manuscript collection policies.

3.3.4 The humanist appreciates the value of browsing which transcends the boundaries of classification and organic arrangement and allows vague and indistinct notions to interact with the sources. Work may have to proceed with several sources simultaneously in order to avoid linear distortions and a strictly serial approach to time and culture. Weintraub also asks whether there is a necessary relation between more information and meaningful knowledge. Is there then a danger of amassing and retrieving more and more about less and less? As archivists we do not deal with exact quantities and measurement, and even for quantitative historians the richer and most complete archival series have severe limitations by the nature and limitations of the information they contain.

3.3.5 How do we know whether, despite our best efforts, the scholar's needs have been fulfilled? This will always remain a particularly difficult problem. Requests for material do not necessarily indicate relevance which may be in inverse proportion to the number of items searched.

3.3.6 The initial request of a user can only be conjecture, since what is required is limited to description of the problem available at the time (6). It may be derived from an inaccurate or irrelevant citation. There is evidence that libraries are only used when success seems likely and even then the librarians may have to interpret the needs through fragmentary conjectures and an imperfect memory of "searchable attributes". The value, therefore, of a system that takes guesswork into account should be stressed. Such guessable attributes are:

(a) inherent, in the article or citation;

(b) assigned, as when provided by librarians, subject headings, classification categories and index terms.

Dialogue is made up of an initial guess gradually refined by lists of authors and titles and "rejection subsets" as fast as possible (7).

3.3.7 Studies in the use of libraries by the humanities research community have had only limited success despite careful planning, and findings have generally been tentative, confirming impressions gained through the experience of the librarians themselves. "Most of the research to date has been of the exploratory or ground-clearing nature" (8). In one such recent study (9) less than half the Ph.D. students who participated had asked the staff for help and advice in their research, their enquiries being limited to questions of inter-library loan. Research material in the humanities does not become obsolete and this is borne out by the study of citation indexes and patterns. The use of monographs appears to predominate over serials (10). Garfield maintains that scholars in the humanities do not necessarily build logically and directly on the work of their predecessors, but may initiate totally new directions. In any case, reinterpretation takes them back to classic texts in a manner less true of scientific research. This use of large numbers of titles can only be confirmed in a general way, since browsing in the stacks defies statistics.

3.3.8 Further generalized patterns of behaviour have been formulated which could also become the basis for user studies (11). Sources of information should distinguish clearly between formal and informal systems of retrieval, i.e. libraries on the one hand, and institutions not primarily in the business of information on the other, in contrast to the informal use of individuals, in particular through the "invisible college" (12), librarians and peers which require the user to reveal the extent of knowledge (or ignorance) for good reciprocity but may damage self-esteem. Needs can be modified by the economic environment of who are information rich or poor. Political systems may even proscribe some categories of information altogether.

3.4 The response of the librarian to user behaviour

3.4.1 Librarians have traditionally sought to assist the user in two ways (13). The first is to provide an end product in the shape of information required by the user. This leads to what has been called the maximum theory of reference work whereby all necessary citations, monographs and similar material are placed before the reader. The second provides guidance to readers through the various retrieval systems but essentially leaves to the reader the responsibility for finding the required material.

3.4.2 This leaves the reader in something of a quandary if the role of the librarian is unclear in any particular case. "How much help and of what kind can I expect from the librarian?" For a while some libraries excluded instructional help altogether, and others now emphasize it for reasons of economy.

3.4.3 The instructional tradition sees librarians as educators and has its origin in the early years of the free public library movement. Those seeking personal improvement through self-help were welcome, whereas students were expected to receive their education in schools and were therefore far less welcome. In consequence, many did not return to the libraries when they became adults.

3.4.4 Archivists may also at times share this approach if only subconsciously and often deplore the fact that school teachers and university professors leave archivists to instruct and advise students on their projects to an unreasonable extent. For these and other reasons, the arrival of groups of students to the archives even more than the single student often creates a somewhat ambivalent attitude.

3.4.5 The problem with too heavy a reliance on instruction is that the user is uncertain whether answers must be found from very general directions as to sources and to what extent the archivist or librarian is sufficiently knowledgeable to respond to more detailed questions and descriptions of need, or even whether such questions would be welcome. Consequently, a failure to communicate can build into mistrust and a sense of indifference as perceived by the user, which is not helped by occasionally patronizing attitudes towards public service.

3.4.6 Resolution of these problems suggests the need for thorough instruction for users in the resources and services of the library or archives whereby both staff and users work more closely together.

3.4.7 To this end, librarians have been urged (14) to rely less on active automated systems of retrieval, which can result in a high incidence of irrelevant citation, and more on personal knowledge of the sources through improvements to the bibliographic record and a greater emphasis on content description. For instance, in some cases, analytics might emcompass chapter headings of some monographs. Is material described in sufficient detail in subject indexes? In any case, there should always be a mediator with sufficient old-fashioned knowledge and scholarship capable of refining, reformulating and resolving enquiries by trial and error, since most data bases respond to Boolean logic which allows terms to be dropped and added but cannot accept reformulation. As automated retrieval becomes more sophisticated, there is an urgent need for mediators of high calibre. Shinebourne also recommends that, in order to assess an author's point of view, far more information should be available in terms of the author's affiliations, the purpose and objective in creating the work, the methodology adopted, and the result and conclusions of any findings whether prescriptive or descriptive. This activity would parallel archivist's concern with similar background information as detailed in "scope and content notes" and similar introductions to inventories.

3.5 Administrators and archivists as users

3.5.1 It is already clear that libraries and archives have much in common concerning user needs, but in addition there are special problems which to a large extent are limited to archives.

3.5.2 Some useful concepts and definitions have been developed (15) on the basic assumption that archives are created organically by persons and institutions in the course of their affairs, for their own purposes and not primarily for the use and information of others, as in the case of published work. What librarians often call "government documents", such as printed annual reports of departments, is archival material selected for the immediate use and information of the general public through publication and, as such, becomes library material albeit with some problems of retrieval in common with the original records.

3.5.3 Delmas distinguishes between the "compiler/user" retrieving documents for legal, fiscal and other administrative purposes from "administrative archives" not open to the public, and the "reader/user" seeking information from "historical archives". He believes there is unnecessary duplication of effort in maintaining these repositories separately and reminds us that private citizens, in fact, use certain classes of administrative archives required to be kept by statute for property registration, tax assessment, etc. Administrative archives are used not only by government decision makers and their officials, but also by heads of private business concerned with natural resources, for instance. Such archives often support researchers producing position papers to which the public may sometimes have access. These administrative archives are highly decentralized and constitute a most varied body of information on the parent institution, and it is important to be reminded of this service to users which is para-archival in the historical sense and should, where possible, be closely related to historical archives and records management, so that all these activities may complement each other.

3.5.4 Delmas also makes the point that archivists are users of archives when they process them or consult them on behalf of the public, and that public access is closely related to public use. This suggests that user studies should in addition encompass enquiries answered by mail and telephone, about which considerable information could be compiled.

3.5.5 Where Delmas is concerned primarily with users of governmental/institutional records at all stages in their life, Berner emphasizes certain features of historical archives, which also include documents from the private sector (16), helpfully distinguishing between the "public archives tradition" (PAT) and the "historical manuscripts tradition" (HMT) as they relate to the user in the United States, which also may have relevance elsewhere.

3.5.6 The technique of dealing with fragmentary remains of family papers from the remote past (usually in the form of correspondence) by means of cataloguing and control at the level of the individual item, according to principles of librarianship (HMT), is contrasted with the processing of public archives by office of origin in the original order of their creation (PAT). He argues that classification by subject using HMT gives an illusion of organic unity which may not exist any longer. In recent times, large collections of private papers spanning a wide range of media and relatively complete in an archival sense have resulted in the breakdown of the item-by-item approach using HMT. These accumulations are seen quite rightly to be as organically archival as those from public institutions, but even here a too tidy and symmetrical arrangement may mask the original context of some documents.

3.5.7 In general, there is clearly a move away from item-by-item description (except for documents of outstanding interest) and the preparation of inventories for manuscript collections similar to those prepared for public records with the file title as the lowest level of description.

3.5.8 These two traditions, complicated by the shift away from HMT and its impact on retrieval systems, faces every user of an archival repository and presents difficulties unique to archivists. Most of the larger archives will in consequence have accumulated over the years a cluster of finding aids of varying quality, precision and complexity, some arranged according to HMT, others to PAT. Berner further points out that, if there is a union index of persons, places and subjects, it is likely to be illogical, ideosyncratic, subjective and lacking a strong internal discipline. In addition, HMT has permeated the approach to manuscripts of AACR II (although this is presently under scrutiny) and one of the major bibliographical data bases in the U.S.A., which also contains archival information, namely OCLC, not to mention NUCMC which so far has not been automated.

3.5.9 The archival approach through PAT, which often involves a records management, préarchivage stage or other form of selective retention, may already be bringing increased consistency to file titles and the standardization of proper names.

3.5.10 Since archival documents are rarely discrete items and depend on their original contextual relation for a full understanding of their content, archivists in the PAT have relied heavily on arrangement as a significant part of the total descriptive process and through this arrangement to illumine the shape and pattern of bodies of information contained in the documents. Unless the inventory is of a very summary or preliminary nature, description of the contents should exceed physical description, although it will be much lower than the item-by-item cataloguing of HMT. By contrast, the bibliographical description of a book using AACR II rules concentrates on physical description and authority identification. Description is limited to isolated subject headings from a thesaurus, such a Library of Congress Subject Headings.

3.5.11 Lack of standards presents a serious obstacle to automation and its attendant advantages for the user, which will be discussed below. However, archivists try to become generally familiar with the contents of the series and collections they process, and this is a strength which surely can be built upon. Indexes, which may be prepared directly from original documents, from the item descriptions or from statements in inventories, are equally non-standard.

3.5.12 Since up until now few standards have been adopted, except in a scattering of repositories, researchers are having to rely on personal mediation by the archivist who must, in turn, rely on scholarship and specific knowledge of a very high order. This will probably always be the case even after the acceptance of standards, because archives deal with the unique and the specific at least at the item level.

3.5.13 Already we can see that the user will benefit greatly from the study by librarians of archivists' methods of content description, and the study by archivists of standard formats, indexing language and thesaurus construction to which librarians and information scientists have given so much attention. So far, there have been few studies by archivists of user needs and behaviour. With our emphasis on arrangement we have tended to work outwards from the textual construct which is still largely descriptive of bureaucratic artifacts in a reconstruction of bureaucracy without the bureaucrats. This has great value, but has it been overemphasized? We know that at best we give a service that more or less satisfies our clients, but that is because without further study there is no way that any of us can know how much better we could be.

3.5.14 Archivists are the link between provenance orientation and content, especially where subject access is limited to the index in the general guide to the repository and researchers infer subjects from the names of persons thought to be associated with them (16). Archivists assume that researchers expect high recall and low precision in provenance arranged records. Can this precision be improved?

3.6 Access and the archivist

3.6.1 Probably the most vital service which an archivist can render to a researcher is access to material requested. Since this topic has been discussed recently, lucidly and at length by Sue Holbert in her manual on reference and access (17), a summary will suffice here. Access may be of three kinds:

3.6.1.1 Physical access. This is related to appraisal and acquisition, since the document being sought may no longer exist or may not have been received by the repository. It is also related to intellectual access, since convenient hours and an appropriate research room to stimulate reflection and insight become factors, and copying services may be the only means of providing access at a distance. Physical access may be denied for reasons of conservation or because the material remains unprocessed. Remember that the right of physical access does not necessarily mean strict equality of access, since a researcher living at a distance from the repository and unable to pay for copying may not in this sense have access. For this reason, taxpayers sometimes receive special privileges in the form of reduced charges.

3.6.1.2 *Legal access*. Some materials may have to be restricted for reasons of national security or personal privacy, but archivists should strive to make available to the public as much material as possible and secure a term of years for the remainder. Closed material may in a sense be deemed not to exist, but the archivist should at least be able to reveal its *existence* in the archives. In university archives there may be access priorities which favour academic staff and students with the public as a secondary consideration. Such access policies should be explicitly stated in advance.

3.6.1.3 *Intellectual access*. This depends on the effectiveness of the entire archival operation, since delays in processing, poor finding aids, imcompetent archivists and inefficient copying facilities all delay or inhibit intellectual access. There must be great care taken to avoid deliberate or systematic withholding of material, unless legally restricted. If the archivist has done his or her best in satisfying the researcher and can make a case for lack of access due to processing backlogs, the researcher will have to be disappointed. The whole mosaic of retrievable information in an archives is to a large extent subjective and selective. It cannot be otherwise. There may be a problem where a researcher has discovered relevant information unknown to the archivist and who could perhaps reasonably claim exclusive use for a while provided the archivist was notified. In general, exclusive use should not be granted by *public* repositories.

NOTES

1. Abraham H. Maslow, Motivation and Personality, 2nd edition, New York, Harper and Row, 1970, 369 p.

2. Maslow, op. cit., p.8.

3. Patrick Wilson, Limits to the growth of knowledge: the case of the social and behavioural sciences, Library Quarterly, vol.50, 1980, pp. 4-12.

4. Wilson, op. cit., pp. 11-12.

5. Wilson, op, cit., p.16.

6. Karl J. Weintraub, The Humanistic Scholar and the Library, Library Quarterly, vol.50, no.1, 1980, pp. 22-39.

7. Don R. Swanson, Libraries and the Growth of Knowledge, Library Quarterly, vol.49, 1979, pp. 3-25.

8. Sue Stone, Humanities and Scholars: Information Needs and Uses, Journal of Documentation, vol.38, no.4, Dec. 1982, p.305.

9. Cynthia Corkill and Margaret Mann, Information Needs in the Humanities: Two Postal Surveys, Centre for Research on User Studies, University of Sheffield, 1978, 158 p.

10. Eugene Garfield, Retrieval in Arts and Humanities. Library Quarterly, vol.50, no.1, 1980, pp. 40-57.

11. Wilson, op. cit.

12. Blaise Cronin, The Invisible College and information transfer: a review, and commentary, with special reference to the social sciences, Journal of Documentation, vol.38, no.3, 1982, pp. 212-236.

13. Anita R. Schiller, Reference Service: Instruction or Information, Library Quarterly, vol.35, no.1, 1965, pp. 52-60.
    See also Colin Harris, "User Education and User Studies" in L.J. Taylor ed., British Librarianship and Information Work, vol.2, London, Library Association, 1983, pp. 145-163.

14. J. Shinebourne, User needs, the new technology and traditional approaches to library services, Journal of Information Science, vol.2, 1980, pp. 135-140.

15. Bruno Delmas, User Needs and Archive Facilities: a tentative typology and analysis, mimeographed draft, Paris, UNESCO, ICA, March 1977, 29 p.

16. Richard C. Berner, Towards National Archival Priorities: a Suggested Basis for Discussion. American Archivist, vol.45, no.2, 1982, pp. 165-174.

17. Mary Jo Pugh, The Illusion of Omniscience: Subject Access and the Reference Archivist, American Archivist, vol.45, no.1, Winter 1982, pp. 33-44.

18. Sue E. Holbert, Archives and Manuscripts: Reference and Access, Chicago, Society of American Archivists, 1977, 30 p.

4. THE PRELUDE TO SERVICE: SURVEYS, APPRAISAL, ACQUISITION

4.1 Surveys

4.1.1 Surveys in one form or another have always been part of an archivist's work, a necessary prelude to appraisal, acquisition, arrangement or description, as we attempt to grasp the nature and magnitude of the task in hand. Surveys are implicit in the early stages of a new repository where provenance and order must often be restored to confusion; they are essential for determining the level of subsequent description and as a precondition for scheduling in a records management programme.

4.1.2 In addition, surveys have been used to identify the configuration of archival materials surviving beyond the repository as a prelude to their better preservation and control, or simply to provide additional sources of information for the user. Archivists have long been honorary members of the "invisible college" whereby academics appraise their colleagues of citations and sources that may be of value to them (1). In this way we supplement our knowledge of sources in an informal, haphazard way, but an organized and carefully planned survey on a particular theme may extend our reach into areas hitherto unexplored, and a useful manual on the subject is available (2).

4.1.3 Surveys of archival materials are primarily intended not only for identification but to improve access. They should alert owners to the value of what they have, which may or may not result in acquisition by a repository. Surveys should be broadly conceived in terms of subject matter; they may be related to specialized research materials over a large area, or an intensive general survey of all surviving records may be appropriate for a locality more particularly in a rural setting after the manner of an archeological "dig" (3).

4.1.4 In any case, every attempt should be made to publish the information obtained in some way, if it is not to remain simply as a finding aid within the institution of origin and should, if possible, be linked to national information systems whether automated or not. It should always be remembered, however, that archival materials located and identified in the private sector are subject to migration, if they are not placed in a recognized archives and if they have been arranged prior to listing, this arrangement may be seriously disturbed. It is possible that, if they are being researched, temporary deposit in an archives may be permitted.

4.2 Appraisal

4.2.1 This subject has also been discussed at length in a recent authoritative manual (4). Sufficient that the appraisal process condemns records to death with a finality and a regularity that totally denies their use to anyone now or in the future. It is an absolutely necessary process, but schedules should be reviewed from time to time, especially when there is a real chance that technological advances may within reasonable time enable bulk to be reduced and control established over such extensive records as tax returns and case papers. Sampling is a poor substitute and of limited value for quantitative studies, however necessary it may be at present (5).

4.2.2 We should never assume that all records preserved in a repository have permanent value. Perhaps some such term as "continuing value" would be more appropriate. There may well be categories of record which, on re-appraisal, can no longer be considered worthy of further retention either because they should never have been accessioned in the first place, or have received all the research they will bear. Is there a reasonable expectation that such records will ever be requested in the future? Will a researcher's work be significantly affected if they are no longer available? Will future scholarship be measurably the poorer for their destruction? Every scrap of record has unique qualities, perhaps of value to someone, but we cannot keep everything. The elements of use effectiveness and re-appraisal should be a part of any retention policy (6).

4.3 Acquisition

4.3.1 Archivists are acquisitive by nature, the servants of an acquisitive society which in the past has centralized most of those records and artifacts which it valued most in large repositories. This centralization was unavoidable if professional care and conservation was to be effective, but however scrupulously archivists respected provenance and original order, a great deal of material was torn from the context of its environment. Repositories in the early years of their existence had space to be filled, uneasy and unstable vacuums, the existence of which tended to be a measure of the archivist's success. With acquisition went status and prestige and an excess of acquisition over space often provided leverage for more space. Mandates were often broad and vague, and there was a tendency especially in public archives to accommodate records of marginal value in the belief that they would one day be of value, to acquire what came easiest and to accumulate an impressive linear measurement on the shelves. A great deal from both the public and private sectors was probably preserved for its own sake and with little attention given to possible use, whereas the goal of acquisition should be access not quantity, although quantity will always be a factor and so will quality. Since then, we have begun to regulate quality and quantity through records management and well defined mandates worked out where possible in cooperation and not competition with our neighbouring colleagues.

4.3.2 There is, however, still room for improvement if the public is to be better served. The librarians are very well aware of this problem and have balanced the costs of purchase, processing, loan and duplication to provide various levels of availability as they relate to actual and projected use. Many archives do not have to budget significantly for their acquisitions and, therefore, tend to overlook the cost of subsequent operations that will make them publicly available. Unlike libraries, we cannot look elsewhere for identical materials, but should these financial considerations have more impact on our acquisition and appraisal policies? There may be extremely valuable materials being lost today because there is much of far less value on our shelves with an implied commitment to process it, but will it ever be of significant research use? Perhaps there is room here for agonizing re-appraisals if we recognize material which may be worth preserving for a while in an archives, but has less than permanent value.

4.3.3 We should certainly be encouraging those who can create and maintain their own archives as an obligation to their successors and to society. There is severe economic pressure on us to spread the load; the days of highly competitive and ill-defined acquisition are probably over and the emergence of the network principle and the data base will increasingly offset any disadvantages to the user.

4.3.4 Even more advanced is the concept of social cost in the private sector, whereby the cost of creating the administration of a company has to be borne by the consumer (much as the social costs of industrial pollution must be borne by society) and that there should exist some recompense to the public in terms of an archives available in due course. The business records of large corporations should increasingly be dealt with in this way. Again, why should those who helped build a successful and profitable enterprise be denied the permanent record of their labours in an archives?

4.3.5 The era of the great patrons and collectors, around which many archives were built, have permanently preserved a massive and invaluable record of social elites. Partly in consequence and partly as a result of trends in historiography, a great deal has been written about them and interpretations of history have been built around them. We know, however, that much of this was at the cost of a more balanced, culturally representational, more systematic acquisitions policy which we must now pursue before it is too late, in order to meet (and stimulate) user demand. Our neglect in the past of women's history and cultural minorities are cases in point. We must recognize the value of records that help to explain the major issues of our time and we should not distort the record with indicators unrepresentative of our culture (7). We tend to be overburdened with the bureaucratic record and ignore the fragile, ephemeral archival materials of the environmental movement, for instance, which could in time lead to changes in our society which we can scarcely foresee.

4.3.6 How is this kind of symmetry and coverage to be achieved, given the universal limitations on space and other resources? It may be that we should recognize broad patterns of similarity in the development of neighbouring municipalities, for example, and that each might specialize in one aspect of that development such as housing and labour relations, which would extend certain advantages to the researcher. In any case, we should increasingly consult with our users on their interests and requirements, so that our final decisions on appraisal and acquisition will be as informed as possible.

NOTES

1. See Chapter 3, note 11.

2. John A. Fleckner, Archives and Manuscripts: Surveys, Chicago, Society of American Archivists, 1977, 28 p.

3. Hugh A. Taylor, Family History: some new directions and their implications for the archivist, Archivaria, vol.11, 1981, pp. 228-231.

4. Maynard J. Brichford, Archives and Manuscripts: Appraisal and Accessioning, Chicago, Society of American Archivists, 1977, 24 p.
See also C.M. Dollar, Appraising Machine Readable Records, American Archivist, vol.41, 1978, pp. 423-430.

5. Felix Hull, *The use of sampling techniques in the retention of records: a RAMP study with guidelines*, Paris, UNESCO, 1981, 64 p.

6. Leonard Rapport, No Grandfather Clause: Re-appraising Accessioned Records, *American Archivist*, vol.44, no.2, Spring 1981, pp. 143-150.

7. Gerald F. Ham, The Archival Edge, *American Archivist*, vol.38, no.1, 1975, pp. 5-13.

5. THE USER IN THE SEARCH ROOM: IMPROVING MANUAL SYSTEMS

5.1 The traditional archival repository

5.1.1 In an established archives, large or small, archivists inherit the search room of their predecessors with all their strengths and weaknesses. If these archives acquire both the records of the parent institutions and manuscripts from the private sector, there is likely to be a mix of finding aids usually created on an ad hoc basis without much prior planning. There will probably be some rules about the format and layout of inventories and the kind of information which should appear in an inventory or on the limited space of a catalogue or index card. Archival repositories tend to develop individual "styles" which evolve over the years and provide a certain measure of coherence, which the skill and knowledge of the staff may fashion into quite an effective instrument of research.

5.1.2 The greatest consistency is likely to be in the inventories created for public or institutional records, since these are shaped around respect for office of origin and, where appropriate, original order and often contain additional information in the form of short administrative histories or other means of indicating scope and content. Some series, or levels of arrangement below the series, may have received more detailed treatment to the extent of preparing and indexing calendars, but this practice is rapidly decreasing in face of the growing backlog of new accessions. The inventories may be indexed separately or be cumulated, and there may be a list of subject headings or thesaurus for its more effective operation. Since more recent public and other records are primarily preserved and maintained for the use of officials of the parent body and are received in an order and configuration designed to maximize that use, access points are likely to be those which best serve bureaucratic needs and not scholarly research in other fields.

5.1.3 Manuscript collections have, on the other hand, been treated with more flexibility especially when only the correspondence has survived, and in college and university repositories with a priority for the research interests of staff and students, the material may be arranged in order of date or alphabetical order of creator with extensive description and subject indexing in the tradition of the calendar. Increasingly, however, the archival nature of large family accumulations is being recognized which, if the internal relationships are to be preserved and descriptive cataloguing reduced on account of bulk, many of the retrieval problems associated with public records begin to appear and the inventories for such collections increasingly resemble those for public records (1).

5.1.4 Other forms of comprehensive finding aid will probably be limited to an overall guide to the holdings of the repository, thematic guides to such groups as business archives or ethnic collections, and the published national guide if such exists which provides some information on research interests available in other repositories or elsewhere.

5.1.5 In addition, there is likely to be material in other repositories available on microfilm and some form of microfilming and photocopying service.

5.1.6 It is also assumed that there will be accumulations of maps, photographs, prints and paintings, and even some film which may still be stored with the textual material by collection, or held in separate custodial divisions.

5.1.7 Within this traditional configuration, the assumption is that the archivists are the principal source for subject access, since they alone know in any one repository the idiocyncracies of the subject index. In addition, archivists tend to specialize in certain fields of enquiry according to their background, interest or the collections they have processed. Above all, they serve as a link between the arrangement by provenance of public records and their content by subject with which they become familiar with steady use over time (2). They assume the public expects high recall and low precision in such records which are often arranged and listed in a very summary way by students under the supervision of archivists. This again limits description, however logical the provenance. Inventories of public records need to be as richly informative as possible.

5.1.8 It is not surprising that researchers generally approach their subject via the names of persons connected with it. Indexes of names are much simpler to construct, and archivists often take their knowledge of subject fields with them into promotion elsewhere, retirement or the grave!

5.2 Avenues for improvement

5.2.1 The user will be greatly assisted if the retrieval systems are logically arranged and explained in such a way that the user, for much of the search, can operate independently of the archivist, feel comfortable with the system no matter what the field of research, and be assured that updating has been carried out on a regular basis (3). Indexes should direct the researcher to the inventories where additional patterns and possibly relevant contexts will be revealed, leading to the documents themselves. Essentially, all finding aids should be interrelated as far as possible, recognizing however that many indexes from an earlier age may be self-contained and require separate searching.

5.2.2 It cannot be emphasized too strongly that the introduction of standard data elements into descriptive practice and the disciplined use of subject headings and thesaurus construction in indexing will improve the user's capacity to carry out searches independently of the archivist and pave the way to effective automation.

5.2.3 Various levels of descriptive detail should also be available to users in contrast to the old unprocessed/fully processed dichotomy. Provided there is an appropriate level of physical control, users may be able to relate to quite limited information concerning scope and content and find them adequate for their needs. It has been suggested (4) that even the basic information provided in a register of accessions may be helpful to users both internally and within a network (5).

5.2.4 In the past archivists in the traditional archives, described above, have been reasonably satisfied with the services they have provided, and the users likewise, but the limitations of the old ways are becoming increasingly evident.

5.2.5 In an experiment carried out at the Baltimore Region Institutional Studies Center (6), an attempt was made to determine scientifically whether the user received greater satisfaction in terms of documents retrieved on a specific subject through:

1. the "provenance method": search through inventories where the subject matter had to be inferred from the operation reflected in the records, but where browsing through these inventories revealed useful patterns and facets for retrieval. Special emphasis is often given to the sub-group within five levels of description (7); or,
2. the "content indexing method": search through an identification of the required content through the use of a thesaurus, or however the subject index is organized.

5.2.6 The experiment was set up in such a way that the archivists identified all the relevant files on specific sub-subjects they could locate through their prior and extensive knowledge of the collections, which formed the control. Researchers were then asked to research these subjects by either one or other of the above approaches.

5.2.7 Results showed poor retrieval levels by both methods and that there was a low overlap of files, further suggesting a very large number of files escaping both methods of search. The equality was surprising in view of the fact that the subject indexes were highly developed and the inventories were regarded by the staff as being somewhat inadequate.

5.2.8 The general conclusions were very tentative, but an improved version of the "provenance method" appeared likely to be more effective, and in either case the experience of the user with the two systems is a crucial variable. This led to the further conclusions that archivists should evaluate their systems on the assumption that much that is being held in repositories is not being retrieved to the extent that both archivists and users imagined, and it emphasized the need for further research into these techniques. Richard Berner's coherent system of arrangement, description and indexing built around the sub-group deserves examination (8).

5.3 "Total archives"

5.3.1 Textual documents dominate the holdings of all but the most specialized repositories, and it is quite understandable that in the past relatively little attention was given to the other media of record which were often maintained physically within their collections of origin. Maps, plans and architectural drawings were probably the first to be physically separated on account of their often large and unwieldy formats; entire collections of photographs were saved from destruction to lie unprocessed for years; topographical paintings and prints were felt to have certain archival qualities and historical content which art galleries naturally ignored; cinematograph film, most baffling of all to archivists, shared the fate of photographs or was totally ignored.

5.3.2 More recently, archivists have sought out these media with increasing energy and remarkable success, but complications have thereby been created for custodians and users alike. At the same time the role of archives has changed to encompass the whole spectrum of permanently valuable record in what has become known in Canada as the "total archives" concept. A recent article has outlined the problems (9) and begins by recognizing four significant goals for a total archives, some or all of which may be operative at one time:

1. The acquisition of documents to reflect all aspects of social activity.
2. Acquisition of all media of record.
3. Involvement in the entire life cycle of records, through a records management programme.
4. Involvement in expanding networks for the interchange of information and strategic planning.

All these have an impact on the user, but none more so than item 2, when separate operational units are created to administer non-textual material, or even to effect a division between textual public records and manuscripts from the private sector.

5.3.3 Unless great care is exercized in intellectual control, separation by media may cause a breach of provenance which cannot be recovered. This was particularly true when maps were alienated from their series or collections of origin. It is essential that a record of the entire collection be maintained "on paper" with a note of any transfers that take place. Moreover, this policy of transfer must be consistent.

5.3.4 A more difficult problem arises when, for example, photographs are separated from a predominantly manuscript collection and offered to the photographic division, who feel that they are of poor quality or negligable value as photographic records, yet the manuscript division may wish them retained. This calls for careful resolution of divisional policies of acquisition.

5.3.5 Control of statutory access regulations may be more difficult to enforce when the records to which they apply are divided. There is even the possibility that a whole division may be transferred away to another department, such as maps to a library or paintings to an art gallery, which would seriously disrupt retrieval systems.

5.3.6 Again, subject specialists in a large archives may have to be duplicated according to the medium instead of having competence across the whole span of record.

5.3.7 These issues must be faced squarely, since most of them bear directly on the user who would ideally like to be served in one search room with all the appropriate media, as requested. Archivists too would for the most part like to arrange and describe their acquisitions in their totality and become authorities on these collections.

5.3.8 In fairness, it must be said however that the various media demand their own disciplines if they are to be professionally administered. For instance, the care, arrangement, description and interpretation of photographs is very different from textual records or maps. Users have come to accept this, but they would like to be sure that the relationships between the divisions are logical and consistent with periodical consultations between archivists over appraisal, acquisition priorities and related problems.

5.3.9 One partial solution is a central reference facility in which copies of finding aids for all divisions are available in one place, supported by advice from reference archivists. This is clearly impractical for card indexes which cannot readily be copied and, if copied, the copy cannot be updated. Such an arrangement might well be possible with an automated system using a standard format, at least for a primary level of bibliographical control and reference, perhaps at the series or some comparable level. Therefore, more detailed finding aids and indexes would be located in the various divisions. This will be considered further under Section 7, "Automation in the Search Room", (pp. 71-79).

5.3.10 There is a danger that media divisions in archives will, in their enthusiasm and specialization, seek to acquire materials which are more appropriate elsewhere, in an art gallery for instance (see 5.6, "Paintings, drawings, prints, maps", pp. 55-59), and that all this collecting may, for want of archival relevance, cause tensions with their colleagues. It must be the responsibility of management to see that this does not happen and that those educating archivists give their students a thorough grounding in the archival dimensions of all the media.

5.4 Photographs

5.4.1 Increasingly, we are coming to realize that photographs are not always what they seem. They can never be taken at their face value, but must always be viewed in the context of the photographer and the technology of the camera. More than any other medium the photograph gives an illusion of knowledge, yet this frozen, narrowly selective, instant in time and space, often lacking colour and clear definition, may well mystify as much as inform. Yet, for all that, a photograph is an image from the past with descriptive elements beyond, yet complementary to, prose description and narrative (10). Above all, the event or moment must be identified by other means and the purpose of the photographer must be understood before the evidence of the camera can be comprehended. Schellenberg's emphasis on the subject matter of photographs and other pictorial records as being more important than "provenance and functional origins" is essentially in the literary tradition of interpreting pictorial images literally instead of visually, and denying them the context required for a proper understanding of textual records (11).

5.4.2 Photographs lack syntax and break up the world into manageable frames of vision, but they do not explain anything or how anything works, and insofar as they give us only the surface of things they may hide more than they reveal. Functions operate over time, which only prose and film can describe (12). On the contrary, photographs with their capture of precise moments with a wealth of particulars help to reveal gestalt, postures and gestures which archivists and users of photographs must strive to interpret correctly. To understand fully the nature of the event, we need to know all we can about the photographer and the equipment. All photographs express quite literally a point of view, an intent, and may be retouched to enhance that intent, honestly or not as the case may be (13).

5.4.3 In Susan Sontag's words, "to collect photographs is to collect the world", and this is a major problem in acquisition strategies. Even if the collection of negatives from a professional photographer, which may run into thousands, is in its original order and carefully identified, the wealth of additional information within the images themselves is daunting when attempts are made to classify significant detail for the user. This is particularly true when the trend is towards a study of the non-elites, the "ordinary families", who through their personal collection of snapshots (if they are identified) can reveal so much that, in the era of the telephone, will never be found in correspondence, and here again there is all the incidental information which at times may be just as important to posterity as the evolution of the family revealed after the fashion of a time lapse camera. A record of the history of photography itself should also be the concern of the photographic archivist.

5.4.4 Not surprisingly, therefore, there are few if any standards for subject analysis, and this may be partly due to present descriptive formats which emphasize authorities and physical characteristics and may not include miniature images of the originals. There are rarely standards for descriptive elements, but there is a good account of the use of ISBD (NBM) in the literature, which does not however include retrieval devices (14).

5.4.5 The users of photographs are often in a hurry, and pressure from publishers, and film and TV producers competing for fresh images, threaten original materials in their haste (15). To make reference copies as prints or in aperture cards is costly and must be selective, which can of course be misleading however careful the selection. Photostatic copies, which are now of relatively good quality, provide a practical solution if the quantity is not too great. Least advisable are those "self-indexing" files of original prints and often indifferent copies which still abound in archives and where the rate of deterioration can be very high. Now that the value of the photographer's own prints are recognized both archivally and artistically, they should be afforded special protection. There is wisdom in having copies of the most used and important images readily available, for although professionals usually know what they want, the "browsers" must be respected whoever they are. In any case, users should be aware of unprocessed material, so that they can at least establish the existence of possible sources for future reference (16).

5.4.6 Historians on the whole have been slow to use the photograph, not just as illustration but as an integral part of their published research, even though photographic evidence is now respectable enough to be admitted in courts of law. A long tradition and training in the use of textual material requires a considerable effort of the will and imagination to encompass other media, and allowances should be made for this. An excellent account (with photographs) of one historian's experience in this field (17) articulates many of the researchers' problems and frustrations. Because of the absence of effective subject retrieval systems, photo archivists must carry a great deal in their heads and the research topic must be explored with them, perhaps more than is usual; small museums and archives often have excellent material but lack the resources to respond to its fragile and technological characteristics; archivists and historians must identify the importance and quality of the image in terms of possible publication; delays and difficulties in comparing photographic copies from a number of repositories can be frustrating, even if unavoidable, and again much has at present to be retained mentally; and finally, the opportunity for the user to photograph originals is appreciated, where this is possible.

5.4.7 Should the photo archivist become involved with "records creation", as in the case of oral history (which is itself often linked to a photographic record)? A good case can be made for this if there is time and funds are available, in particular when buildings are to be demolished, unique events are occurring and to maintain a record of the then and now variety with a "time lapse" interval of a number of years is important. There are, of course, other possible approaches too numerous to mention but the principle is surely quite legitimate.

5.5 Film, sound

5.5.1 Film, in that it consists of a series of still photographs, is photographic, but in that sound and movement are sequential and episodic, there is a strong resemblance to narrative and the printed book. As with books, films (apart from home movies) are designed to be "published" through distribution. Theirs is a very public medium and their research interest, as with still-photography, is both what they say in terms of content and also what they have to say about the society and, more specifically, the artists that made them and participated in them. In consequence, acquisition mandates for film archives at a national level can be extremely complex. "National content" can embrace not only location and theme, but performers and production; users, because of their interest in film as an art form, prefer a broadly based approach to this issue and often expect copies of the international classic repertoire to be available as well. The use of excerpts as opposed to the showing of complete films is usually restricted to professional film and TV directors and producers. Residual rights heavily restrict the use of commercial cinema and TV in schools or other extension activities. Researchers may view the material personally and for this purpose the original is usually transferred to videotape. In short, operating a film archives can be expensive if quality is to be maintained and, if attempts are made to establish and meet criteria for the regular acquisition of significant TV programs, the costs can further accelerate.

5.5.2 Film, on the other hand, is quite well suited to cataloguing by AACR II at the item level, but for news film in particular the researcher may require further analytics down to the level of shot-listing. There is much to be said for a thorough "calendaring" of film first time round as it is, like the mediaeval parchment rolls of old, very cumbersome to search.

5.5.3 We have dealt so far only with the completed product, but more important to the archivist is the documentation, the "out-takes" and much else that provides evidence and information about the activity of the operation. With all this to concentrate upon, should an archives be seen as a research centre for feature films and documentaries etc., or should this be the role of a film library as it often is, especially if distribution is also provided as a service? There would have to be a clear distinction, of course, between prints for distribution and the copy for permanent preservation which may or may not be what might be termed the 'original', which is often hard to identify since films may exist in several slightly different versions. Of course, library and archives can exist in the same organization, but there is a philosophical problem here which may become a larger issue in time. We do not keep a brick with the business archives of a brick manufacturer, nor do we always keep a copy of the published book with the literary manuscripts and correspondence of an author. Why should we keep the release print of a film in an archives rather than a library? From the point of view of the user and the film archivist, a clear division might simplify retrieval and research, but the matter requires a great deal more investigation.

5.5.4 Sound, whether recorded radio, "soundscape" or some form of "oral history" presents many similar problems to the catalogue and hence the user in terms of retrieval, unless there is time-consuming and expensive transcription. It is now generally held to be preferable, if the original tape or at least a representative sample is preserved with the transcript, and the development of an archival version of videodisc, presently being researched at the Public Archives of Canada, should make for easier retrieval of all the above media, provided data elements and description standards can be established and the system automated.

5.6 Paintings, drawings, prints, maps

5.6.1 Of all the media of record none reveal so sharply the close relationship between the curatorial elements of heritage as iconography and cartography. For centuries the print gave generations of mankind their only common visual experience of works of art, science and distant places and the schemata upon which they were built complemented the lines of literacy (18). In the West their exactly repeatable images prefigured printing with movable type by a few years. The print made possible the publication of the map and the illusions of projection. Prints are collected by libraries, art galleries and archives, printed maps by libraries and archives, and globes by these and also museums. Is this because the image unites where the text divides? None of these media are archival in the strict sense, but they are closely related historically to their hand-drawn or painted counterparts, and not all printed material is published.

5.6.2 In the face of these anomalies, there may be a case for considering the work of an artist as essentially one of communication and to regard these records of communication as archival in the same manner as textual messages. Certainly, they are rich in information and it seems arbitrary to divorce diaries, correspondence and accounts from an artist's works of art. All form a continuum of activity on record. The fact that one artist produces a masterpiece, while another's work is of indifferent quality, seems beside the point in this context (19). This is not to say that an artist's works of art should not be cared for in an art gallery and viewed there by the public, or that the artist's output should not be scattered around the world. Just that, in an archival and documentary sense, the archivist should try to bring the totality of the evidence before the user. What is judged to be of great artistic merit may change with time, and archives may have masterpieces in their picture divisions by way of a bonus. At the same time, art galleries contain pictures full of valuable historical content, details of which cannot presently be retrieved for research.

5.6.3 As regards cataloguing, AACR II presents real difficulties to the iconographic archivist and a more appropriate format is described in detail in a recent manual (20).

5.6.4 There is a pressing need for more documentation of these visual images in card catalogues through:

1. a copy of the image;
2. descriptive reference based on the materials and techniques used to produce the image;
3. evaluative, critical annotation or description;
4. a new semantic taken from the terminology of art theory, as opposed to library classification schemes (21).

A combination of text and microfiche is being used at the Public Archives of Canada, with separate fiches for each artist. For Estelle Jussim:

> "History is not a compilation of unique events for which unique visual records exist, but rather is a normative phenomenon for the quantitative evaluation for which the contents of large numbers of visual records may provide visual evidence" (22).

Can the information profession learn to process these visual aggregates?

5.6.5 Sometimes bordering on art, or closely linked to sketches and topographical description, older maps, whether printed or in manuscript, can be as valuable, or as misleading, as the engravings and paintings of their period. More recently, aerial photography has provided far greater accuracy and these films are often kept in map divisions, of which the original rolls and not subsequent prints form the master copies (23).

5.6.7 Soon the researcher may be able to use raw field and statistical data converted to digital form, which will constitute the "original" and which can be converted to any scale or projection. Ehrenberg insists that "these characteristics have tremendous consequences for future researchers, who will be able to use contemporary data files to create maps that do not now exist" through a wide range of reproductive methods (24).

5.6.8 An ISBD format for maps has now been negotiated. Cartographic archivists can employ a standard which eludes many of their colleagues in other media.

NOTES

1. Richard C. Berner, Manuscript Collections and Archives - a Unitary Approach, Library Resources and Technical Services, vol.9, 1965, pp. 213-220. (Berner has written several articles on this subject.)

2. See Section 3 above, Note 17.

3. Lydia Lucas, Efficient Finding Aids: Developing a System of Control of Archives and Manuscripts, American Archivist, vol.44, no.1, Winter 1981, pp. 21-26.

4. David Bearman, Towards National Information Systems for Archives and Manuscripts: Opportunities and Requirements, Chicago, Society of American Archivists, Sept. 1982, p.8.

5. Bearman, op. cit., pp. 14-16.

6. See Section 1 above, Note 8.

7. O.W. Holmes, Archival Arrangement: five different operations at five different levels, American Archivist, vol.27, 1964, pp. 21-42.

8. Most recently described in University of Washington Libraries, Manual for Accessioning Arrangement and Description of Manuscripts and Archives, Seattle, 1982, 96 p.

9. Terry Cook, The Tyranny of the Medium: A Comment on 'Total Archives', Archivaria 9, 1980, pp. 141-150. For a response to this article, see Andrew Birrell, The Tyranny of Tradition, Archivaria 10, 1980, pp. 249-252.

10. Walter Rundell, Photographs as Historical Evidence: Early Texas Oil, American Archivist, vol.41, no.4, 1978, pp. 373-398.

11. T.R. Schellenberg, The Management of Archives, New York, Columbia University Press, 1965, p.325.

12. Susan Sontag, On Photography, New York, Farrar Straus and Giroux, 1977, 207 p.

13. Peter Robertson, More than Meets the Eye, Archivaria 1, no.2, 1976, pp. 33-44.

14. David Mattison and Sandra Sherman, Cataloguing Historical Photographs with ISBD (NBM), Archivaria 5, 1978, pp. 101-108.

15. Richard B. Huyda, Photographs and Archives in Canada, Archivaria 5, 1978, pp. 7-16.

16. Robert Weinstein and Larry Booth, Collection, Use and Care of Historical Photographs, Nashville, American Association for State and Local History, 1977, 222 p.

17. Rundell, op. cit.

18. William M. Ivins, Prints and Visual Communication, Cambridge, Harvard University Press, 1953, 190 p.

19. Hugh A. Taylor, Documentary Art and the Role of the Archivist, American Archivist, vol.42, no.4, 1979, pp. 417-428.

20. Hugh A. Taylor, The Arrangement and Description of Archival Materials, Munich, K.G. Saur, 1980, pp. 93-113.

21. Estelle Jussim, The Research Uses of Visual Information, Library Trends, April 1977, pp. 763-778.

22. Jussim, op.cit., p.765.

23. Ralph E. Ehrenberg, Archives and Manuscripts: Maps and Architectural Drawings, Chicago, Society of American Archivists, 1982, 64 p.

24. For a valuable philosophical study of the map as a form of communication "by which the map acquires meaning from its maker and evokes meaning in its user", leading in time to "a general theory of cartography", see Arthur H. Robinson and Barbara Bartz Petchenik, The nature of maps: essays towards understanding maps and mapping, Chicago, University of Chicago Press, 1976, 138 p.

ADDITIONAL NOTE

The following work on the interpretation of photographs involving personal relationships came to the author's attention after the final typescript had been completed, and relates to 5.4.3 above:

Robert U. Akeret, Photoanalysis: how to interpret the hidden psychological meaning of personal and public photographs, New York, Peter H. Wyden, 1973, 250 p.

6. MACHINE READABLE ARCHIVES

6.1 Challenges to the user

6.1.1 Machine readable archives (MRA) cannot be considered within the context of the traditional repository and manual finding aids. It is at present the only medium of record in general use which cannot communicate directly through the eye or ear and yet, because of its capacity for almost instantaneous response and change, it has been likened metaphorically to an extension of our nervous system.

6.1.2 For the user, MRA presents problems and advantages: problems, in that the traditional methodology of near linear exploration through the characteristically fragmented record on traditional media with the aid of provenance, arrangement and the card index gives way to an integrated corpus of data requiring search strategies, analysis and pattern recognition of quite a different order. The advantages are part of the problem in that, once the medium has been mastered as a source of research, its capacity to manipulate its own data for the user is vast though not unlimited.

6.1.3 Historical and other social scientific research based on quantitative analysis, which owes so much to the computer (although its origins lie in immensely laborious manual systems of gathering and processing raw data), is changing our perceptions of the past. We see time less as a continuum than an influence constantly reshaping our present in subtle ways that often escape us; we are trying to live in our regional environments rather than master them. We are trying to discern patterns rather than impose them, and we are desperately trying not to mistake the parts for the whole. Samuel Hays identifies two main elements:

> One is a concern for the broad structural characteristics of society and the long-term changes in those characteristics ... a discontent with the narrow range of vision of limited segments of space and time, and a desire that

> the frame of reference be a set of articulated concepts of social change. The other is the accompanying desire to bring into the study of the past the whole range of society ... the non-people and the non-events, not simply the mass of people as a mass, but all segments of the social order, from top to bottom, as an interesting whole (1).

6.1.4 Kenneth Thibodeau has posed more specifically the question whether this is an age of profound or superficial change. To answer this, we will need:

> Masses of data, first, coherently and appropriately organized. Secondly, objective and unambiguous measures of change. Thirdly, the ability to extract from the data the information needed to apply the measures of change and perform the associated tests (2).

6.1.5 The techniques of quantitative research and pattern recognition will help to overcome the problem that the fragmentary survival of the papers of elites (let alone the rest) distort our view:

> What is attempted in quantitative research is not full knowledge of reality, but an increasingly closer approximation to it; what has been described in a mathematical metaphor that is entirely appropriate, as the asymtotic approach to truth (3).

6.1.6 Historical social research is systematic rather than intuitive, whereby the historian no longer "gets the feel" by immersion in the evidence, but tests historical descriptions and hypotheses, probing in a tactile way through the computer. However, the technical aspect of the numbers game should not overshadow concept and method (4). A preponderance of quantitative studies in political and urban history in the U.S.A. are a direct response to the appropriate records being available (5), much of it through the computer, but unrealistic expectations of what can be achieved through quantification should be avoided. The archivist, like the historian, has also learned to become wary of the computer.

6.1.7 The techniques employed are of great interest to the archivist, because in the drive for greater objectivity, the records become central, the historian's gloss more periferal. It is becoming increasingly unacceptable to speak of a "typical" entrepreneur or politician in a particular field; dichotomies and homogeneities ("blacks and whites", "national character") become less prominent, as also in the archives themselves, which suggests that in our cataloguing techniques we should be very careful how we classify and categorize information out of context. The need, therefore, is for a rich variety of disaggregate descriptions and records from all levels of society.

> The desire is to find data that are uniform throughout a system and that will show diversity in a number of variables. This occurs with income data, property data, religious data, ethnic data, a great variety of things. But this underlines the need for local data, and the necessity of having such local data throughout the system, not just one level. It helps to define the character of the records (6).

6.1.8 It is within this context that the uniform but individually insignificant pieces of data in central and local records become so important, especially at the level of the record series (specific operational activities of departments of government), case papers and legal papers. These are precisely the series which archivists in the past have found to be so intractible, partly because they defy retrieval by subject, partly because of their bulk, and partly because of their insignificance at the item level, given manual retrieval only. We have sometimes taken comfort in aggregates and sampling, but neither route has given much comfort to our clients. Most of us are sensitive enough to have a bad conscience about this destruction, but in the face of space shortages and hitherto little indication of a user demand, we had no choice. Even archives have to be reasonably cost effective or, more correctly, use effective. Sampling is no help to block-face analysis when relating the census returns to tax records, for instance.

6.1.9 Regional history from a quantitative standpoint is essentially interdisciplinary and multimedia in the documentary sense. The non-linear, spacial nature of urban and geographical studies draws on the map and the photograph, including the time-series of topographical maps and aerial photographs. Alterations to dwellings as revealed in photographs can also be linked to changing family fortunes and life styles. "The rhetoric of a geographer is the rhetoric of the map" (7) and the photographic aggregate provides a gestalt which is hard to perceive in any other way.

6.1.10 There is a further development which the archivist should study and that is record linkage as a kind of micro-biography (8). Just as the antiquary has passed down to us a love of the document as an artifact to be appreciated for its own sake, so the genealogist has kept alive the notion that we are all part of a chain of being, a kind of universal double helix, but whereas so much of genealogy is the rather arid compilation of a family organization chart within a fixed hierarchy, record linkage is the lateral relations of the same person to information in a number of files. The birth, marriage and death of an individual is an example of a simple record linkage through appropriate registers. To this, it may be possible to add place of dwelling, religion, military service and much else besides, and so build up biographical data on individuals in significant groups to be later correlated and quantified. In this way, whole new files of information can be created from disparate sources. Such files, however, whatever their implications for the freedom of the individual, would have a certain value for the expert in record linkage. Allied to this study is cohort (life cycle) analysis, tracing the subsequent lives of births in a particular year, for instance. The sampling of records for retention is, of course, the greatest enemy of record linkage.

6.1.11 Finally, there is comparative history which might, for instance, juxtapose the history of the prairies of Canada with the steppes of the U.S.S.R. or study the problem of world urbanization through the file held at Berkeley, California (9). As the global village becomes a reality, archivists will do well to ensure that their cataloguing and information retrieval systems are compatible internationally; UNIMARC has been designed specifically for this purpose. So much for some of the new trends in historical studies. It is time to consider some general characteristics about the present configuration of surviving documentary record and the archivist's response to all these new challenges.

6.1.12 Computers reveal patterns of behaviours hitherto unseen (10), since they search their memories in a non-linear way, much as the TV screen yields up its information to the scanner. Equally significantly, with machine readable archives, the historian and administrator now have the same information source of retrievable data available, provided the documentation is preserved (11). This is in sharp contrast to traditional records, which may be familiar to the administrator who created and assembled them, but this intimate knowledge dies with his departure and by the time the historian has access, he may have to be content with a line of description in an inventory describing a fraction of the original record. With MRA, records management and archival management become almost one. The past is no longer dim and distant, but in a limited sense ever present. It is possible that, as computing becomes cheaper, there will be more record of permanent value preserved in machine readable form. Vast data bases in the fields of health, social security, police and courts of law will be created and the archivist will have to ensure that, where these are not incremental, the bases are periodically dismantled prior to update, thereby taking "snapshots" of the file, analogous with the time-lapse camera. Such a process would have immense value for regional history, but as far as the Public Archives of

Canada is concerned, it is at present both expensive and experimental. Archivists and historians must also remember that the statistical data assembled for administrative purposes is for the present and immediate future.

> This means that few historical records, and in this instance historical statistics, are made that can describe long-range social change. At best they may pertain to short-range social change of the kind necessary to justify to a government agency or foundation that an investment has paid off. Few such organizations are concerned about measuring yield in 50- to 100-year spans. At the same time, social scientists are overwhelmingly present ... let us say "now"... minded; their interest in data is in the analysis of current problems rather than social change. It is conceivable that evidence could be generated for the purpose of describing long-run social change, but it is not. And because the historical record is thus oriented towards the present, the historian himself is biased toward describing history in terms of a sequence of current-situation events rather than in terms of social change. The weight of the bias in the evidence has been too great for most historians to escape (12).

6.1.13 Meanwhile, regional and quantitative historians have long since taken data banks into their thinking, and those in the field of political science are becoming familiar to archivists dealing with MRA. Great promise lies in the possibility of land registration in data banks (13), which, however, involves some horrendous legal hurdles, but which in turn could be linked to orthography and photography, to land use, and information on the family through the census where we encounter the whole field of privacy, supported in some countries by statute till the heavens fall. All archivists have a deep concern for the privacy of the individual and defend it meticulously, while at the same time recognizing the unique store of information relative to the historic individual, which no kind of aggregation or nominal substitution can match. In the long haul, people are either proud of or indifferent to their family's remote past. The unique record of the identified individual, systematically gathered and having substantive value, should in some way be preserved.

6.1.14 Even the data which researchers amass for their own use is too voluminous to be fully exploited by them and we, as archivists, should be far more aware of the contents and capabilities of data banks as an extension of the records and retrieval systems for which we are responsible. Specialized data archives created specialized people. "Perhaps, then, the most important purpose of data archives is not gathering data but facilitating research" (14). On the other hand:

> The merging of data from a wide variety of sources would in fact create a new data base amenable to new techniques of statistical analysis which will be developed along with the new computer technology. In addition, new research strategies will evolve, since the demands of such research will exceed the resources of the single scholar. Teams of scholars will probably undertake this historical research of the future. In any event, historical research of the future will afford wonderful opportunities for historians with imagination and creativity in data manipulation and analysis (15).

6.1.15 Policy analysts too have noted that historical environmental factors revealed by quantitative analysis are important in measuring the impact of policy on people, in contrast to an emphasis on behaviourist theories (16).

6.2 Challenges to the archivist

6.2.1 Of the challenges to archivists presented by machine readable archives, appraisal is one of the most demanding. Can we anticipate the kinds of problems that will be confronted or the theories that will be tested by social scientists in the future and build data bases accordingly, or must we simply keep as much controlled disaggregated microdata as we reasonably can to be available for research that we cannot foresee? The wisest course is probably a mix of these two approaches.

6.2.2 There are also qualitative considerations particularly in respect to MRA, which might also apply to traditional records, involving questionnaires, how well they have been constructed and how information rich the answers received might be. Those machine readable data files (MRDF) which will be valuable for research almost indefinitely (census material, for instance) should have the highest priority, but it may be some time before many of them will be used, so how are we to know (17)? Even routine records in MRA may be valuable because they are complete, disaggregated and can be manipulated. Perhaps researchers could supply MRA archivists with "hierarchies of value" for source data; there is a danger that too much available material might be counter-productive, especially if reference and retrieval systems become overloaded and not as effective as they might be.

6.2.3 Fishbein further makes the point that, as in traditional archives, public archivists are vitally concerned with the functional background of MRDF, with the origins of administration and policy and with people's rights. The value of information for other forms of research is, of course, recognized as almost as important, but it ranks behind these priorities. By contrast, archivists in data centres established primarily for the research communities of universities and colleges put emphasis on the informational value, and the record layout and code book has tended to satisfy the researcher. Yet quantifiers should examine the traditional administrative background and origin of files, if their true value is to be assessed, and in this the archivists can and should help them.

6.2.4 If government and the research community are both to be well served by MRA in years to come, then there must be the closest possible understanding between departments, records managers and archivists (18). It is often the practice at present for MRA archivists to come to arrangements with departments directly, because records managers have insufficient experience with MRA. This imbalance must be corrected, if the "life cycle" of these records is to take its normal course, and either the department or the archives is not to be encumbered with files past or before the proper time respectively. In particular, documentation standards for MRA must be prepared and adhered to strictly with as much of the documentation being automated and added to the data files. The MRA Division of the Public Archives of Canada provides the user as required with data copy, data abstracts, data analysis and documentation manuals on microfiche. Cataloguing is by AACR II rules. The staff is divided between data archivists and technicians, so that increasingly, in contrast to traditional materials, the medium of record becomes for the archivist etherialized and non-existent. What is left is a display of information with most of the advantages of the printed page without its disadvantages (19), a foretaste of the library, and the archives, of the future.

6.2.5 It is not surprising that it takes time to build a clientele for this new service. After ten years, only a small percentage of social scientists in Canada are using the resources of the Public Archives of Canada in MRA, but this infant medium bids fair to outgrow all its ancestors (20).

NOTES

1. Samuel P. Hays, The Use of Archives for Historical Statistical Enquiry, Meyer H. Fishbein, ed., The National Archives and Statistical Research, Athens, Ohio Press, 1973, p.60.

2. Kenneth Thibodeau, Machine Readable Archives and Future History, Computers and the Humanities, vol.20, 1976, p.91.

3. W.O. Aydelotte, A.G. Bogue, and R.W. Fogel, The Dimensions of Quantitative Research in History, Princeton, Princeton University Press, 1972, p.[illegible].

4. Samuel P. Hays, Historical Social Research: Concept, Method and Technique, Journal of Interdisciplinary History, vol.4, 1974, p.475.

5. Charles M. Dollar, Documentation of Machine Readable Records and Research: a Historian's View, Prologue, vol.3, 1971, p.28.

6. Hays, The Use of Archives, p.103.

7. Hays, Historical Social Research, p.84.

8. E.A. Wrigley, ed., Identifying People in the Past, London, Arnold, 1973, 159 p.

9. Robert P. Swierenga, Computers and Comparative History, Journal of Interdisciplinary History, vol.5, 1974, p.267.

10. J.M. Clubb and H. Allen, Computers and Historical Studies, Journal of American History, vol.54, no.3, 1967, p.604.

11. Lionel Bell, The Archival Implications of Machine Readable Records, Archivum, vol.26, 1979, pp. 83-92. See also M. Roper, The changing face of the file: machine readable records and the archivist, Archives, vol.14, 1979-80, pp. 145-150.

12. Hays, The Use of Archives, p.63.

13. Angus C. Hamilton, Problems in Land Registration and in Filing Environmental Data in Eastern Canada, The Canadian Surveyor, vol.25, 1969, p.16.

14. D. Nasatir, Data Archives for the Social Sciences: Purposes, Operations and Problems, Paris, UNESCO, 1973, p.9.

15. Dollar, op. cit., p.28.

16. C.L. Geda, et al, ed. Archivists and Machine Readable Records, Chicago, Society of American Archivists, 1980, p.22.

17. Meyer Fishbein, "The traditional archivist and the appraisal of machine readable records", in Geda, op. cit., p.59.

18. Harold Naugler, "The machine readable archives program of the PAC: the first five years", in Geda, op. cit., p.70.

19. Licklider, Libraries of the Future, p.4.

20. For further discussion on the implications of automation and machine readable archives for quantitative studies, see also a series of papers on "Public History: State of the Art 1980" in The Public Historian, vol.2, no.1, and a further series of papers on "The New History:

the 1980's and beyond" in Journal of Interdisciplinary History, vol.12, nos. 1-2, 1981, in particular those by Bogue and Herlihy (see Bibliography for further details and additional studies by J.M. Clubb, C.M. Dollar, R.I. Hofferbert and others).

7. AUTOMATION IN THE SEARCH ROOM

7.1 The need for automation

7.1.1 With the passage of time the shortcomings of traditional systems in archives administration are becoming increasingly apparent. Some of these have already been discussed (see pp. 43-50), but others include the difficulty of regular and accurate updates of information for both archivists and the public; the presumption that most files and other materials will remain inactive for want of adequate description and indexing to extend their relevance to regular users and wider publics; the difficulty of retrieving related information across a wide range of sources and media; the time required to carry out searches where low precision and high recall have come to be accepted, perhaps with the hope that this enforced browsing through marginalia will yield rewards. This is not, however, the kind of browsing which is valued by the humanist as creative and constructive (see p. 25). Meanwhile, archivists, too, must spend a large part of their time processing their material only to be disappointed that their non-standard finding aids cannot mix and merge for the benefit of the researcher. Much of this time might be saved, if more information on authority identification (in a bureaucracy, for instance) could be shared. Labour costs continue to climb; without far greater reliance on technology, the traditional archives may become a backwater of grossly under-utilized cultural resources. Increased automation is essential.

7.1.2 Three recent contributions from the United States (1) have resulted from a task force and a symposium respectively of archivists and users, which has drawn together some of the best available insights in North America on the subject. Much of what follows derives from these sources, in the hope that a wider audience will find much to ponder upon.

7.1.3 Automation in archives is, of course, not new and several experiments and programs dating from the 1960's onward have accumulated a fund of knowledge and experience, perhaps more valuable than the finding aids generated during these years of quite primitive hardware and software. Most of the early products were based on simple sort and merge strategies and resulted in lists and indexes on print-out which closely resembled the book and possessed almost the same limitations. Since then, much progress has been made in standard formats, variable length fields, hierarchical display and the development of more sophisticated indexing techniques, but essentially the end product has been still an exercise in publishing, however valuable that may be. Familiar examples from the United States include the National Historical Publications and Records Commission's Directory of Archives and Manuscript Repositories in the United States and the guide to their holdings in preparation from a data base using SPINDEX III, which cannot be searched on line.

7.1.4 It is instructive to recall that the National Information Systems Task Force was created by the Society of American Archivists in order to recommend which of two systems should become the "national" one: NHPRC and SPINDEX, or the National Union Catalogue of Manuscript Collections based on a library format and not yet automated. The Task Force came to realize that it was not a case of choosing between two systems, but was rather the need to examine all the implications of automation on the archival profession, archival theory and the management of archives, including the emerging phenomenon of networks, where effective cooperation can greatly improve manual systems. (See also Section 8, "Networks", pp. 80-83.)

7.1.5 It goes without saying that automation, to be effective in the archival field, must be shared. Shared cataloguing formed the basis of automation in libraries from which grew a large number of services, considerable expertise and significant economies of scale. There is no direct parallel here with archives, where it is more likely that automation will improve services rather than reduce costs. Where then would the major advantages lie?

7.2 Benefits for the researcher

7.2.1 The researcher wants the automated archival equivalent of the "right book at the right time", and McCrank defines "reference services" as including the normal procedures connected with traditional finding aids together with on-line interrogation and batch-mode searches using Boolean logic to limit the range of the enquiry. The search through free text abstracts of finding aids, using natural language in the manner of legal searches, is also considered "reference", as also the reading of surrogates from the original records displayed on the screen and perhaps omitting personal names in the case of census returns, for instance. "Research" in this kind of environment would be restricted to the study of the original materials themselves.

7.2.2 Clearly, this has immense advantages for the researcher who would use these reference sources by accessing appropriate data bases, whether they be of local networks carrying regional information or networks devoted to themes or special studies. It is unlikely that there will ever be one vast integrated network or data base, but compatability through standardization should be increasingly possible, provided the obsolescence of hardware does not become a problem. In any case, various data bases could be consulted in succession. Once the required documents had been located, it is again possible that the data base vendors may be able to supply a microfiche of the required documents for a small charge.

7.2.3 It is important that only generalized Data Base Management Systems, which are open-ended and can accommodate a variety of formats, should be considered for development of this kind. Efforts are presently being made to obtain approval for a revised MARC format for manuscripts and public records in association with AACR II, which avoids the necessity of cataloguing at the item level. SPINDEX is probably the most flexible software package in North America at present, despite its lack of on-line capability.

7.2.4 All this would add up to computer controlled "browsing" through a range of resources otherwise impossible, which might in the long run be more effective than traditional methods among the shelves of a library.

7.2.5 In short, the researcher could carry out an increasing amount of work in a central location once more, and avoid the heavy expense of time and travel required by the increasing decentralization of resources resulting partly from the heritage movement.

7.3 Benefits for the archivist

7.3.1 Bearman has remarked on a suicidal urge (arising from our sympathies towards users) to cooperate most when the cooperation benefits the researchers and least when it benefits our institutions (2). Acquisition policies, for instance, remain highly competitive and lack very little sense of regional planning. We share information in a general way about collections in our repositories, but we rarely engage in cooperative purchases of materiel or standardization of authority terms.

7.3.2 Bearman also advances the interesting concept that the information on a "main entry" library catalogue card processed according to AACR II is made up, not of information about content, but of authority data such as the author, publishers, etc., which once standardized may be used again and again. Exchange of this kind of "authority data" has not been explored in archives and yet there are similar authorities, such as the standard use and spelling of place names and bureaucratic hierarchies which are constantly changing. This approach deserves further study which may cause us to reconsider the claim that all archives are unique and, therefore, incapable of shared cataloguing. This may be true at the item level, but untrue at the series level.

7.3.3 In view of the small percentage of processed material in North American archival repositories which have been fully processed, and the small size of most of these repositories, we have all tended to overlook the value to the user of the entries in our accession registers and similar control information which is initially generated, especially as it relates to access and intellectual content no matter how brief the entry. Such information could be furnished to a network (automated or not) by very small repositories which could be of great service to archvist and user alike. It might be argued that the accessioning of a collection does not provide sufficient control to permit research, but for very small accumulations of a few documents it may be possible, and many large collections are received in good order or at least in sufficient order to be searched. In any case, the existence of material deserves to be recorded as a prelude to assistance for further processing if necessary and the planning of cooperative acquisition.

7.4 The implications of standardization

7.4.1 Let us assume that a repository or regional grouping of repositories are planning some measure of automation. It must now be clear that there should be a functional specification to act as a model, which will indicate various standard options and a thorough analysis of the management system of each repository (not just its retrieval system), since there may well be sound managerial and custodial spin-offs from automation involving, for example, the internal movement of information whereby feedback from users may result in the addition or modification of index terms.

7.4.2 At the heart of automation is, of course, the need for standardization in the first instance of those data elements which describe the operations in an archives, a data element being defined as "the smallest discrete unit of information required for the activity for which it is defined. Thus in a recipe for preparing food, 'ingredients' is one data element"(3). To this end, a Data Element Dictionary has been drafted (Society of American Archivists, 1982) which is designed to cover basic operations in any media of record.

7.4.3 It should be made clear that standardization, whether of data elements or content description (thesauri), does not mean submission to a mechanical tyranny, but rather to a precise language and set of standards which are flexible and subject to principles and guidelines. Accurate description using standard language can be an elegant creation, an art more than a science.

7.4.4 Finally, if we are to make a start, we may have to "freeze" most existing finding aids in their manual mode and make a fresh departure using accepted standards. We must recognize that we have inherited much that is of high quality in the retrieval systems of traditional archives and that we must advance with caution, for:

> According to the most advanced theories of cognition, men think by manipulating and modifying 'schemata'. A new concept is achieved not by creating a new schema ab initio ... but by adapting an old schema, or if necessary arranging several refurbished schemata into a new complex structure ... A guideline ... is to discard the upper echelon schemata, those at the level of system and sub-system, and to retain for possible alteration and re-use, the low echelon, component-level schemata (4).

Licklider sees the demise of the library as system and the book as sub-system, while retaining all the display qualities of the page and the bibliographical resource of the library in the "library of the future"; the same might be said of the "search room of the future".

7.5 Relationships with automated library systems

7.5.1 While we have much to learn from librarians about the dynamics of automated systems and, in particular, strategies for free text searching of abstracts and document or collection surrogates, the creation of catalogue cards as a part of a shared catalogue program will likely decrease in value. There may appear to be an economy in bending archival processing practices to fit formats designed primarily for the library, but all such a catalogue entry can do is to point to more detailed manual finding aids not available in the data base. It may, however, have value within a very large archives where a first line of bibliographic control is being established for the entire repository and embracing all media, (see p.49). A Public Archives of Canada task force recommended that further tests be made with AACR II for which sample entries had been prepared for each medium. AACR II was already being used for the Public Archives Library and Machine Readable Archives quite successfully. In 1977, PRECIS was also proposed by the same Task Force as the most likely indexing system to suit the requirements of the Archives, but extensive tests would, of course, be necessary.

7.5.2 On the other hand,

> with most basic cataloguing functions for books and serials now automated, a major focus of automation at most research libraries for the next decade is the completion of the on-line catalogue by integrating special collections, undertaking retrospective conversions and linking bibliographic and analytic data bases. Each of these efforts dovetails with the needs and interests of the archival community (5).

The fact remains that all formats and rules which had their origin in the needs of libraries and which are not modified successfully to accommodate archivists, may be a poor investment.

7.5.3 Whatever the immediate future may hold for archives/ library relations and our shared experience in automation, the archival profession will undergo considerable change in the long run. As more and more information of an archival nature goes on line, subject specialization in search strategies directed to primary sources and their surrogates may well destroy the archivist's symbiotic relationship with the documents themselves.

7.5.4 Not only will the research emphasis in archives become distanced from custody, process and records management, but there may even emerge reference archivists who will be more like information scientists over against colleagues who will primarily acquire, process and care for archival materials. It is to be hoped that these remain interchangeable roles if the "one world" of the archivist is not to be sundered.

7.5.5 In any case, it is clear that with so much information resource available, the archivist may even become a consultant and specialist on the evolution of communication formats so that the best possible record can be created and maintained through time, working alongside systems analysts and librarians, information scientists and policy planners in an age where these differentiations may seem quaint and old-fashioned, and in a user-oriented society where archival materials as we know them will have become precious heritage artifacts insofar as they survive the ravages of acidity.

NOTES

1. David Bearman, Towards National Information Systems: Strategies and Frameworks, Chicago, Society of American Archivists, June 1982, 27 p.

   David Bearman, Towards National Information Systems: Opportunities and Requirements, Chicago, Society of American Archivists, Sept. 1982, 39 p.

   L. McCrank, ed., Automating the Archives, American Society for Information Science, White Plains, N.Y., Knowledge Industry Publications Inc., c.1981, 363 p.

   See also entries in the Bibligraphy at the end of this study, under Bartle and Cook, Arad and Olsen, Roper, M., Cook, M., Archives and the Computer.

2. Bearman, _op_. _cit_., Sept. 1982, p.14.

3. Bearman, _op_. _cit_., June 1982, p.12.

4. Licklider, _Libraries of the Future_, p.3.

5. Bearman, _op_. _cit_., Sept. 1982, p.17.

8. NETWORKS

8.1 Origins

8.1.1 The emerging archival networks are a reflection of deep societal changes overtaking post-industrial society. Centralism, with clearly identifiable centres and margins that were a mark of the railway age, and the growth of industrial urban conglomerates, is yielding to urban decline, the return of populations to the countryside and increasing administrative decentralization. This is the age of fluid ad hoc coalitions, interest groups, task forces and matrix management, in contrast to the old political and bureaucratic hierarchies which still exist but which are being challenged everywhere. Where information has become a staple commodity, it is not surprising that archives, along with so many other institutions, should be operating or moving towards networks which are a paradigm of automation and the computer itself. All that has been said in this paper so far about the relationship between the user and the archivist suggests that it will not be a case of whether there will be a rapid increase in networking, but when this will come about, given the present economic climate. Not all networks are automated at this time, but networks should always be planned at least within the context of automation (1).

8.2 Types

8.2.1 Networks by their very nature can take many forms and serve a wide variety of purposes (2). They are essentially cooperative and collaborative, whereby the larger repositories share their information resources with the small ones and improve their standards. The smaller in turn communicate their holdings in such a way that users may have a clear picture of the available archival materials in an entire region to meet their needs. There are also administrative advantages in cost sharing of materiel and certain other services in the fields of training, conservation, etc. (See also Section 7, "Automation in the Search Room, pp. 71-79).

8.2.2 The special features of networks can best be summarized as follows:

1. The central repository may take most of the initiative in archival operations, using small satellite archives to make information and documents available locally, including local processing, but with the cataloguing centralized.

2. A government archives may deposit certain local public records which it may already have processed in a recognized local repository, such as a university in the appropriate region, or may give such a repository a mandate to receive such material direct from local municipalities, etc. Such a network would probably work as a loose federation.

3. A network of large repositories may fund a field coordinator and provide substantial staff time, space and funding for joint projects.

4. A network may emphasize cooperative rather than competitive acquisition programs.

5. The physical transfer of holdings between members of the network may be authorized for the benefit of the user.

6. A consortium of non-archival institutions might fund a central repository rather than create their own small archives.

7. It should also be remembered that branches of national archives, in fact, form networks which are often closely integrated, but may be independent and competitive in certain respects (as with the acquisition policy of Presidential Libraries in the United States).

8.2.3 Whatever the operational framework, a variety of emphases may also be possible:

1. The local documentation of non-elites through the assembly of scattered, bulky

local records in a decentralized mode with the potential for automation later.

2. Specialization by network members in agreed fields of acquisition within a region, such as aspects of agricultural history. At the same time, all members may acquire certain core material, such as the papers of local politicians.

8.2.4 There is naturally some resistance from users and creators of materials to having them neither fully centralized nor retained at the point of creation. Networks represent compromises, since originals cannot be in two places at once and, if they are to work, they must be effective by ensuring that:

1. Repositories within the network are not overloaded with material beyond what they can handle.

2. Appraisal decisions are realistic in terms of space and personnel to accommodate increased growth.

3. Information systems are standardized as much as possible.

4. Networks are not exclusively service oriented. The conservation of materials and economic administration is also important.

5. There is a clear, written agreement and understanding of the terms of membership of the network.

6. That, if possible, annual contributions, once agreed upon, are assured. Networks cannot be continuously maintained on single instance grants.

7. The network can call upon both specialists and generalists for the efficient operation of technical services.

8. Full advantage is taken of "grassroots" contacts and extension activity locally, drawing on the resources of the network for this work.

NOTES

1. Bearman, *op. cit.*, Sept. 1982.

2. *The Midwest Archivist*, vol.6, no.2, 1982.
   This publication contains papers delivered at a National Conference on Regional Archival Networks, held at Madison, Wisconsin, U.S.A., 1981.
   Much of this section is based on this issue.

9. BEYOND THE SEARCH ROOM: EXTENSION SERVICES

9.1 Attitudes

9.1.1 Archivists usually hold an ambivalent attitude towards extension. On the one hand, we are aware of the rich resources for display and inspiration in our custody and the potential for projecting documents in whatever form as cultural artifacts. On the other hand, we see quite rightly that our principal responsibility lies in custody, process and reference in response to research, with little to spare in time and money for activities which might be seen as optional extras. Consequently, extension work is carried on around the mainstream of an archivist's daily tasks and borne patiently, if not somewhat reluctantly, especially if too many evenings or weekends are employed in this way.

9.1.2 In reality, there is a seamless web which binds all these efforts, the one being an "extension" of the other set within the mandate and thrust of archival policy. Extension services are essentially an extension of reference work (1), and the following observations are built around this and three other sources (2).

9.2 Definition and scope

9.2.1 In extension work, "outreach" or "public programs" as they are commonly described in North America, the archivist, instead of responding to the initiative of the researcher, takes the initiative and offers new experiences and insights to various "publics" through publications, workshops, lectures and exhibits which may well bring increased use of the archives and increased responsiveness to users in consequence of critical feedback to archivists.

9.2.2 Archivists often display latent talents in extension work and, since highly sophisticated programs will be the exception rather than the rule, our ingenious involvement will be appreciated by our patrons who usually see us in more conventional roles, and we will certainly gain valuable experience in communication.

9.2.3 Most archives are into public programs without being aware of it, since almost any transaction with the public beyond a "one-to-one" relationship qualifies, publications, talks and tours being the most traditional.

9.2.4 It is essential that the potential users of any public program are accurately identified and that the program is carefully focussed accordingly. Exhibits should have well-defined themes; workshops should respond to evident needs; new audiences and new research constituencies can be attracted and old friends further enriched.

9.2.5 Archivists must be cautious not to "overreach" themselves but build their program gradually as and when staff increases, reaching out from the archives building as the initial centre of extension activities to groups in their localities, and then to act as facilitators for projects which might involve a whole community, such as the presentation of ethnic archives.

9.2.6 Extensive involvement with schools often remains elusive, despite the best intentions, unless there is a member of the staff with the time to work closely with teachers in identifying documents that harmonize with the curriculum (3). Unfortunately, teachers also have difficulty in finding the time for such preparation and exciting opportunities are unavoidably lost.

9.2.7 With the development of networks, automation, and eventually interactive TV, much research and group activity may be decentralized and even located in the home, by which time much that we call outreach will have become an integral part of mainstream archival operations.

NOTES

1. Elsie F. Freivogel, Education Programs: Outreach as an Administrative Function, American Archivist, vol.41, no.2, 1978, pp. 147-153.

2. Gail F. Casterline, Archives and Manuscripts: Exhibits, Chicago, Society of American Archivists, 1980, 70 p.

   Ann Pederson and Gail F. Casterline, Archives and Manuscripts: Public Programs, Chicago. Society of American Archivists, 1982, 94 p.

   Hugh A. Taylor, Clio in the Raw: Archival Materials and the Teaching of History, American Archivist, vol.35, 1972, pp. 317-330.

3. Michael Cook, Teaching with Archives, International Journal of Archives, vol.1, no.1, 1980, pp. 25-36.

10. THE USER IN THE FUTURE: EDUCATION, RESEARCH AND DEVELOPMENT

10.1 Education

10.1.1 It is clear that archival education, while still stressing the custodial nature of the profession whereby documents are held in trust for posterity whatever immediate needs may be, must at the same time develop the capacity of archivists to release the vast and complex resources of information that their holdings contain, relating not only to the past but also to the near-present.

10.1.2 Archivists are also coming to realize that a steady flow of permanently valuable record within their repositories can only be secured by effective records management, the principle of which must be clearly understood by us as we work closely with managers.

10.1.3 Meanwhile, there is much to learn from librarians (and they can also learn from us) about the capture and retrieval of information through the use of standard formats and procedures sufficiently flexible to embrace all media, including library material.

10.1.4 It is time for the training programs of archivists, librarians and documentalists to be "harmonized" (1), so that where possible they can at least share a basic core curriculum prior to specialization in their respective disciplines. Integration of historical and information studies has also been proposed (2). This would greatly enhance mutual understanding and cooperation with gains not least for the user, who is basically concerned with information whatever the source, and will ultimately welcome integrated systems. Delmas further noted that the harmonization of training must and can be achieved, but the starting point has to be, not some theoretical ideal profession, but the documents and archive collections to be dealt with, which may be the only practical approach.

Archives with predominantly historical records of an early period would naturally find this harmonization much more difficult.

10.1.5 It has also been shown that, given an improvement in the current world recession, there may be a sharp increase in archival activity both in Europe and the Third World (3), along with a need for expertise in data processing, a key element in harmonization and user satisfaction. A new generation of archivists moving confidentally in the new information society could greatly strengthen the profession.

10.1.6 This is not the place to detail curricula, since Delmas has built some interesting models, but all student archivists would surely benefit from what he calls the "psychosociology of communications", a subject almost entirely neglected by most schools and training programs.

10.2 Research and development

10.2.1 The archival profession has up until now been starved of research to the extent that we seem to be developing a craft more than a science, although there is much to commend our pragmatic, practical approach to basic principles. However, if the user and the profession is to be better served, it is time that some archivists be given the chance of freedom from daily professional life to prepare the kind of detailed studies of retrieval experiments, formatting, and user needs and behaviour, from which librarians have learned so much. There is a need for speculative theory to be put to the test and for these findings to be passed down to the archives graduate programs and other training courses for the benefit of the profession as a whole.

10.2.2 A number of research institutes within the major language regions could serve this purpose. "Archival science" must be supported by a body of knowledge which is more than personal observation or even collective wisdom, if it is to have any genuine scientific pretension. Automation has now provided the tools for such enquiry; all we need is the will and the opportunity.

10.2.3 Finally, there is the need also for users to be trained in the new methodologies and techniques appropriate to their various disciplines, and some of this might well be with the aid of archivists and librarians at the point where the researcher would enter the reading room or approach the terminal. Research, even more than at present, will become a joint quest shared by archivist and user alike, both bending their skills towards wresting knowledge from information and wisdom from knowledge in this troubled world.

NOTES

1. Bruno Delmas, The training of archivists: analysis of the study programmes of different countries and thoughts on the possibilities of harmonization, Paris, UNESCO, 1979, 75 p.

2. L.J. McCrank, Prospects for integrating historical and information studies in archival education, American Archivist, vol.42, no.4, 1979, pp. 443-455.

3. Michael Cook, The education and training of archivists: status report of archival training programmes and assessment of manpower needs, Paris, UNESCO, 1977, pp. 20-21.
For further publications on this theme by Cook, see the Bibliography at the end of this study.

BIBLIOGRAPHY

Akeret, Robert U. *Photoanalysis: how to interpret the hidden psychological meaning of personal and public photographs*. New York, Peter W. Wyden, 1973. 250 p.

Arad, A. and Olsen, M.E. *An introduction to archival automation*. ICA, Committee on Automation, 1981.

Aydelotte, W.O., Bogue, A.G. and Fogel, R.W. *The dimensions of quantitative research in history*. Princeton, Princeton University Press, 1972. 435 p.

Bartle, R. and Cook, M. *Computer applications in archives: a survey*. BLRD Report no.5749. University of Liverpool, 1983. 58 p.

Bearman, David. *Towards national information systems: strategies and frameworks*. Chicago, Society of American Archivists, June 1982. 27 p.

Bearman, David. *Towards national information systems for archives and manuscripts: opportunities and requirements*. Chicago, Society of American Archivists, Sept. 1982. 39 p.

Bell, Lionel. Controlled vocabulary subject indexing in archives. *Journal of the Society of Archivists*, vol.5, 1973, pp. 285-299.

Bell, Lionel. The archival implications of machine readable records. *Archivum*, vol.26, 1979, pp. 85-92.

Berner, Richard C. Manuscript collections and archives - a unitary approach. *Library Resources and Technical Services*, vol.9, 1965, pp. 213-220. (Berner has written several articles on this subject.)

Berner, Richard C. Towards national archival priorities: a suggested basis for discussion. *American Archivist*, vol.45, no.2, 1982, pp. 165-174.

Bogue, A.G. Historical research and state archival data. Geda ed., Archivists and machine readable records, pp. 17-31.

Bogue, A.G. Quantification in the 1980's: numerical and formal analysis in United States history. *Journal of Interdisciplinary History*, vol.12, 1981, pp. 137-175.

Brichford, Maynard J. *Archives and manuscripts: appraisal and accessioning*. Chicago, Society of American Archivists, 1977. 24 p.

Brooks, Philip C. *Research in archives: the use of unpublished primary sources*. Chicago, The University of Chicago Press, 1969. 127 p.

Burke, Frank G. The application of automated techniques in the management and control of source materials. *American Archivist*, vol.30, no.2, 1967, pp. 255-278.

Burke, Frank G. The future course of archival theory in the United States. *American Archivist*, vol.44, no.1, 1981, pp. 40-46.

Casterline, Gail F. *Archives and manuscripts: exhibits*. Chicago, Society of American Archivists, 1980. 70 p.

Clark Jnr., Robert L. ed. *Archive-Library relations*. New York, Bowker, 1976. 218 p.

Clubb, J.M. Quantification and the 'new'history: a review essay. *American Archivist*, vol.37, 1974, pp. 15-26.

Clubb, J.M. and Schenck, E.K. *Historical social research: the use of historical and process-produced data*. Stuttgart, Klett-Cotta, 1980. 536 p.

Clubb, J.M. and Allen, H. Computers and historical studies. *Journal of American History*, vol.54, no.3, 1967, pp. 599-607.

Cook, Michael. *Archives and the computer*. London, Butterworth, 1980. 152 p.

Cook, Michael. *The education and training of archivists: status report of archival training programmes and assessment of manpower needs*. Paris, UNESCO, 1979. 73 p.

Cook, Michael. Teaching with archives. *International Journal of Archives*, vol.1, no.1, 1980, pp. 25-36.

Cook, Michael. Professional training of archivists: problems of modernization and harmonization. Paris, UNESCO, *Journal of Information Science, Librarianship and Archives Administration*, vol.2, 1980, pp. 150-158.

Cook, Michael. *Guidelines for curriculum development in records management and the administration of modern archives: a RAMP study*. Paris, UNESCO, 1982. 74 p.

Cook, Michael. Applying automated techniques to archives administration: a comment on the present situation and areas of likely progress. *Journal of Documentation*, vol.39, no.2, June 1983, pp. 73-84.

Cook, Terry. The tyranny of the medium: a comment on "total archives". *Archivaria* 9, 1980, pp. 141-150.

Corkill, Cynthia and Mann, Margaret. *Information needs in the humanities: two postal surveys*. University of Sheffield, Centre for Research on User Studies, 1978. 138 p.

Cronin, Blaise. The invisible college and information transfer: a review and commentary, with special reference to the social sciences. Journal of Documentation, vol.38, no.3, 1982, pp. 212-236.

Couture, Carol and Rousseau, Jean-Yves. Les archives au XXe siècle, une réponse aux besoins de l'administration et de la recherche. Université de Montréal, 1982. 491 p.

Debons, Anthony ed. Information science: search for identity. New York, Harcourt, Bruce, Jovanovich, 1972. 491 p.

Delmas, Bruno. User needs and archive facilities: a tentative typology and analysis. (Mimeographed draft.) Paris, UNESCO, ICA, March 1977. 29 p.

Delmas, Bruno. The training of archivists: analysis of the study programmes of different countries and thoughts on the possibilities of harmonization. Paris, UNESCO, 1979. 75 p.

Dollar, Charles M. Documentation of machine readable records and research: a historian's view. Prologue, vol.3, 1971, pp. 27-31.

Dollar, Charles M. Appraising machine readable records. American Archivist, vol.41, 1978, pp. 423-430.

Dollar, Charles M. Quantitative history and archives. Archivum, vol.29, 1982, pp. 46-52.

Dollar, Charles M. Machine readable records of the federal government and the National Archives. Geda ed., Archivists and machine readable records, pp. 79-101.

Ehrenberg, Ralph E. Archives and manuscripts: maps and architectural drawings. Chicago, Society of American Archivists, 1982. 64 p.

Elliott, Clark A. Citation patterns and documentation for the history of science: some methodological considerations. American Archivist, vol.44, no.2, Spring 1981, pp. 131-142.

Fishbein, M.H. ed. The National Archives and statistical research. Athens, Ohio Press, 1973. 255 p.

Fishbein, M.H. The "traditional archivist" and the appraisal of machine readable records. Geda ed., Archivists and machine readable records, pp. 56-61.

Fleckner, John A. Archives and manuscripts: surveys. Chicago, Society of American Archivists, 1977. 28 p.

Floud, R. Quantitative history: evolution of methods and techniques. Journal of the Society of Archivists, vol.5, no.7, April 1977, pp. 407-417.

Ford, G. User studies: an introductory guide and select bibliography. University of Sheffield, Centre for Research on User Studies, 1977. 92 p.

Freivogel, Elsie F. Education programs: outreach as an administrative function. American Archivist, vol.41, no.2, 1978, pp. 147-153.

Furth, Hans. The operative and figurative aspect of knowledge and information. Debons ed., Information Science, pp. 21-27.

Garfield, Eugene. Retrieval in arts and humanities. Library Quarterly, vol.50, no.1, 1980, pp. 40-57.

Geda, C.L. et al., ed. Archivists and machine readable records. Chicago, Society of American Archivists, 1980. 248 p.

Gracy II, David B. Archives and manuscripts: arrangement and description. Chicago, Society of American Archivists, 1977. 49 p.

Hall, Homer J. Patterns in the use of information: the right to be different. Journal of the American Society for Information Science, March 1981, pp. 103-112.

Ham, F. Gerald. The archival edge. American Archivist, vol.38, no.1, 1975, pp. 5-13.

Ham, F. Gerald. Archival strategies for the post-custodial era. American Archivist, vol.44, no.3, 1981, pp. 207-216.

Hamilton, Angus C. Problems in land registration and in filing environmental data in Eastern Canada. The Canadian Surveyor, vol.25, 1969, pp. 12-29.

Harris, Colin. User education and user studies. L.J. Taylor ed., British librarianship and information work, vol.2, London, Library Association, 1983, pp. 145-163.

Hays, Samuel P. Historical social research: concept, method and technique. Journal of Interdisciplinary History, vol.4, 1974, pp. 475-482.

Hays, Samuel P. The use of archives for historical statistical enquiry. Meyer H. Fishbein ed., The National Archives and statistical research, Athens, Ohio Press, 1973, pp. 60-71.

Herlihy, David. Quantification in the 1980's: numerical and formal analysis in European history. Journal of Interdisciplinary History, vol.12, 1980, pp. 115-135.

Hickerson, Thomas H. Archives and manuscripts: an introduction to automated access. Chicago, Society of American Archivists, 1981. 60 p.

Holbert, Sue E. Archives and manuscripts: reference and access. Chicago, Society of American Archivists, 1977. 30 p.

Hofferbert, R.I. and Clubb, J.M. Social science data archives: applications and potential. Sage Contemporary Social Science Issues 39. Beverley Hills & London, Sage Publications, 1977. 116 p.

Hull, Felix. Jenkinson and the 'acquisitive' record office. Journal of the Society of Archivists, vol.6, no.1, April 1978, pp. 1-9.

Hull, Felix. The archivist and society. J.S.A., vol.6, no.3, April 1979, pp. 125-130.

Hull, Felix. The archivist should not be an historian. J.S.A., vol.6, no.5, April 1980, pp. 253-259.

Hull, Felix. Foundations. J.S.A., vol.7, no.3, April 1983, pp. 149-155.

Hull, Felix. The use of sampling techniques in the retention of records: a RAMP study with guidelines. Paris, UNESCO, 1981. 64 p.

Huyda, Richard B. Photographs and archives in Canada. Archivaria 5, 1978, pp. 7-16.

Innis, Harold A. The bias of communication. Foreword by Marshall McLuhan. Toronto, University of Toronto Press, 1971. 226 p.

Ivins, William M. Prints and visual communication. Cambridge, Harvard University Press, 1953. 190 p.

Jacobsen, Phoebe R. The world turned upside down: reference priorities and the state archives. American Archivist, vol.44, no.4., pp. 341-345.

Jenkinson, Hilary. Roots. Journal of the Society of Archivists, vol.2, no.4, 1961, pp. 131-138.

Johnson, Elmer D. History of libraries in the western world. Metuchen, N.J., 2nd edition, 1976. 354 p.

Johnson, Elmer D. Communication: an introduction to the history of writing, printing, books and libraries. 4th edition. Metuchen, N.J., The Scarecrow Press Inc., 1973. 304 p.

Jussim, Estelle. The research uses of visual information. Library Trends, April 1977, pp. 763-778.

Jussim, Estelle. Visual communication and the graphic arts: photographic technologies in the nineteenth century. London, R.R. Bowker Co., 1974. 364 p.

Kent, Allen. Insoluble problems. Debons, Information Science, pp. 299-311.

Licklider, J.C.R. Libraries of the future. Cambridge, Mass., M.I.T. Press, 1965. 219 p.

Lucas, Lydia. Efficient finding aids: developing a system of control of archives and manuscripts. American Archivist, vol.44, no.1, Winter 1981, pp. 21-26.

Lunin, Lois et al. Perspectives on secondary information sources: development and future. Journal of the American Society for Information Science, May 1982.

Lytle, Richard H. Intellectual access to archives: 1. Provenance and content indexing methods of subject retrieval. American Archivist, vol.33, no.1, 1980, pp. 64-75.

Lytle, Richard H. Intellectual access to archives: 2. Report of an experiment comparing provenance and catalogue indexing methods of subject retrieval. American Archivist, vol.43, no.2, 1981, pp. 191-207.

McCrank, L.J. Prospects for integrating historical and information studies in archival education. American Archivist, vol.42, no.4, 1979, pp. 443-455.

McCrank, L.J. ed. Automating the archives. American Society for Information Science, White Plains, N.Y., Knowledge Industry Publications Inc., c.1981. 363 p.

McGarry, K.J. Communication knowledge and the librarian. London, Clive Bingley, 1975. 207 p.

McLuhan, Marshall. Understanding media: the extension of man. New York, McGraw-Hill. 1964. 359 p.

McLuhan, Marshall. The Gutenberg galaxy: the making of typographical man. Toronto, University of Toronto Press, 1969. 293 p.

Maslow, Abraham H. Motivation and personality. 2nd edition. New York, Harper and Row, 1970. 369 p.

Mattison, David and Sherman, Sandra. Cataloguing historical photographs with ISBD (NBM). Archivaria 5, 1978, pp. 101-108.

Midwest Archivist, vol.6, no.2, 1982. This publication contains papers delivered at a national conference on regional archival networks held at Madison, Wisconsin, U.S.A., 1981.

Nasatir, D. Data archives for the social sciences: purposes, operations and problems. Paris, UNESCO, 1973. 126 p.

Naugler, Harold. The machine readable archives program of the PAC: the first five years. Geda ed., *Archivists and machine readable records*, pp. 67-77.

Nevitt, Barrington. Archivist and comprehensivist. Unpublished paper read to the Association of Canadian Archivists in 1978. 13 p.

Nevitt, Barrington. *The communication ecology*. Toronto, Butterworths, 1982. 181 p.

Otten, Klaus. Basis for a science of information. Debons, *Information Science*, pp. 91-106.

Peace, Nancy E. and Chudacoff, Nancy F. Archivists and librarians: a common mission, a common education. *American Archivist*, vol.42, no.4, 1979, pp. 456-462.

Pederson, Ann and Casterline, Gail F. *Archives and manuscripts: public programs*. Chicago, Society of American Archivists, 1982. 94 p.

Pugh, Mary Jo. The illusion of omniscience: subject access and the reference archivist. *American Archivist*, vol.45, no.1, Winter 1982, pp. 33-44.

Robertson, Peter. More than meets the eye. *Archivaria*, vol.1, no.2, 1976, pp. 33-44.

Robinson, Arthur H. and Petchenik, Barbara Bartz. *The nature of maps: essays towards understanding maps and mapping*. Chicago, University of Chicago Press, 1976. 138 p.

Roper, M. The changing face of the file: machine-readable records and the archivist. *Archives*, vol.14, 1979-80, pp. 145-150.

Roper, M. New information technology and archives. *UJISLAA*, vol.4, no.2, April-June 1982, pp. 107-113.

Rundell, Walter. Photographs as historical evidence: early Texas oil *American Archivist*, vol.41, no.4, 1978, pp. 373-398.

Sahli, Nancy. Finding aids: a multi-media systems perspective. *American Archivist*, vol.44, no.1, 1981, pp. 15-20.

Schiller, Anita R. Reference service: instruction or information. *Library Quarterly*, vol.35, no.1, 1965, pp. 52-60.

Shannon, Claude E. and Weaver, Warren. *The mathematical theory of communication*. Urbana, University of Illinois Press, 1949. 117 p.

Shinebourne, J. User needs, the new technology and traditional approaches to library services. *Journal of Information Science*, vol.2, 1980, pp. 135-140.

Sontag, Susan. On photography. New York, Farrar, Straus and Giroux, 1977. 207 p.

Stone, Sue. Humanities scholars: information needs and uses. Journal of Documentation, vol.38, no.4, Dec. 1982, pp. 292-313.

Swanson, Don R. Information retrieval as a trial and error process. Library Quarterly, vol.47, 1977, pp. 128-148.

Swanson, Don R. Libraries and the growth of knowledge. Library Quarterly, vol.49, 1979, pp. 3-25.

Swierenga, Robert P. Computers and comparative history. Journal of Interdisciplinary History, vol.5, 1974, pp. 267-286.

Taylor, Hugh A. Clio in the raw: archival materials and the teaching of history. American Archivist, vol.35, 1972, pp. 317-330.

Taylor, Hugh A. The media of record: archives in the wake of McLuhan. Atlanta, Georgia Archive, vol.6, no.1, 1978, pp. 1-10.

Taylor, Hugh A. Documentary art and the role of the archivist. American Archivist, vol.42, no.4, 1979, pp. 417-428.

Taylor, Hugh A. The arrangement and description of archival materials. Munich, K.G. Saur, 1980. 181 p.

Taylor, Hugh A. Family history: some new directions and their implications for the archivist. Archivaria, vol.11, 1981, pp. 228-231.

Taylor, Hugh A. The collective memory: archives and libraries as heritage. Archivaria 15, 1982-83, pp. 118-130.

Theall, Donald F. The medium is the rear view mirror. Montreal, McGill-Queens University Press, 1971. 261 p.

Thibodeau, Kenneth. Machine readable archives and future history. Computers and the Humanities, vol.20, 1976, pp. 89-92.

Thompson, James. A history of the principles of librarianship. London, Clive Bingley, 1977. 236 p.

Weinstein, Robert A. and Booth, Larry. Collection, use and care of historical photographs. Nashville, American Association for State and Local History, 1977. 222 p.

Weintraub, Karl J. The humanistic scholar and the library. Library Quarterly, vol.50, no.1, 1980, pp. 22-39.

Williams, Gordon R. The functions and methods of libraries in the diffusion of knowledge. Library Quarterly, vol.50, no.1, 1980, pp. 58-75.

Wilson, Kathryn B. and Eustis, Joanne D. The impact of user frustration on humanities research. College and Research Libraries, vol.42, no.4, July 1981, pp. 361-365.

Wilson, Patrick. Limits to the growth of knowledge: the case of the social and behavioural sciences. Library Quarterly, vol.50, 1980, pp. 4-12.

Wilson, T.D. On user studies and information needs. Journal of Documentation, vol.37, no.1, 1981, pp. 3-15.

Wrigley, E.A. ed. Identifying people in the past. London, Arnold, 1973. 159 p.

RAMP and Related Documents

1. Unesco. General Information Programme. Expert Consultation on the Development of a Records and Archives Management Programme (RAMP) Within the Framework of the General Information Programme, 14-16 May 1979. Paris, *Working Document* (PGI/79/WS/1). Paris, Unesco, 1979. 19 p. Available also in French.

2. Unesco. General Information Programme. Expert Consultation on the Development of a Records and Archives Management Programme (RAMP) Within the Framework of the General Information Programme, 14-16 May 1979. Paris, *Final Report* (PGI/79/WS/II). Paris, Unesco, 1979. 36 p. Available also in French.

3. Manning, Raymond, Gilberte Pérotin and Sven Welander, comps, and eds. *Guide to the Archives of International Organizations*. Part I. The United Nations System. Preliminary version (PGI/79/WS/7). Paris, 1979. 301 p.

4. Cook, Michael. *The Education and Training of Archivists -- Status Report of Archival Training Programmes and Assessment of Manpower Needs* (PGI/79/CONF. 604/COL.2). Paris, Unesco, 1979. 71 p. Available also in French

5. Delmas, Bruno. The Training of Archivists -- Analysis of the Study Programme of Different Countries and Thoughts on the Possibilities of Harmonization (PGI/79/CONF. 604/COL.1). Paris, Unesco, 1979. 75 p. Available also in French.

6. Unesco. Division of the General Information Programme. Meeting of Experts on the Harmonization of Archival Training Programmes, 26-30 November, Paris, 1979. *Final Report* (PGI/79/CONF. 604/COL.7). Paris, Unesco, 1980. 18 p. Available also in French.

7. Roper, Michael. *Democratic Republic of the Sudan: Establishment of a Technical Training Centre in Archival Restoration and Reprography* (FMR/PGI/80/180). Paris, Unesco, 1980. 31 p.

8. Kecskeméti, Charles and Evert Van Laar. *Model Bilateral and Multilateral Agreements and Conventions Concerning the Transfer of Archives* (PGI/81/WS/3) Paris, Unesco, 1981. 34 p. Available also in Arabic, French, Russian and Spanish.

9. Silva, G.P.S.H. de. *A Survey of Archives and Manuscripts Relating to Sri Lanka and Located in Major London Repositories* (PGI/81/WS/4). Paris, Unesco, 1981 100 p.

10. Borsá, Iván. *Feasibility Study on the Creation of an Internationally Financed and Managed Microfilm Assistance Fund to Facilitate the Solution of Problems involved in the International Transfer of Archives and in Obtaining Access to Sources of National History Located in Foreign Archives* (PGI/81/WS/7). Paris, Unesco, 1981. 31 p. Available also in Arabic, French, Russian and Spanish.

11. White, Brenda. *Archives Journals: A Study of their Coverage by Primary and Secondary Sources.* (RAMP Studies and Guidelines). (PGI/81/WS/10, Paris, Unesco, 1981. 72 p. Available also in French

12. Pieyns, Jean. *Feasibility Study of a Data Base on National Historical Sources in Foreign Repositories* (PGI/81/WS/24). Paris, Unesco, 1981. 66 p. Available also in French.

13. Weill, Georges. *The Admissibility of Microforms as Evidence: A RAMP Study* (PGI/81/WS/25). Paris, Unesco, 1982. 84 p. Available also in French and Spanish.

14. Hull, Felix. *The Use of Sampling Techniques in the Retention of Records: A RAMP Study with Guidelines* (PGI/81/WS/26). Paris, Unesco, 1981. 64 p. Available also in French and Spanish.

15. Cortés Alonso, Vicenta. *Perú: Sistema Nacional de Archivos y Gestión de Documentos: RAMP Proyecto Piloto* (FM/PGI/81/110). Paris, Unesco, 1981. 56 p. Available also in English.

16. Crespo, Carmen. *Republic of Argentina: Development of a Regional Demonstration and Training Centre at the School for Archivists, University of Cordoba* (FMR/PGI/81/116 E). Paris, Unesco, 1981. 28 p. Available also in Spanish.

17. Ricks, Artel. *Republic of the Philippines: RAMP pilot project for the establishment of a regional archives and records centre*. (FMR/PGI/81/158). Paris, Unesco, 1981. 49 p.

18. Evans, Frank B. *The Republic of Cyprus: Development of an archival and records management programme* (FMR/PGI/81/166). Paris, Unescom 1981. 64 p.

19. Unesco. General Information Programme. *Survey of Archival and Records Management Systems and Services 1982* (PGI/82/WS/3). Paris, Unesco, 1982. Available also in French.

20. Rhoads, James B. *The Applicability of UNISIST Guidelines and ISO International Standards to Archives Administration and Records Management: A RAMP Study* (PGI/82/WS/4). Paris, Unesco, 1982. 95 p. Available also in French and Spanish.

21. Unesco. Division of the General Information Programme. Second Expert Consultation on RAMP (RAMP II) Berlin (West), 9-11 June 1982. *Working Document* (PGI/82/WS/6). Paris, Unesco, 1982. 31 p.

22. White, Brenda. *Directory of Audio-Visual Materials for Use in Records Management and Archives Administration Training* (PGI/82/WS/8). Paris, Unesco, 1982. 71 p.

23. Tirmizi, S.A.I. *Guide to Records Relating to Science and Technology in the National Archives of India: A RAMP Study* (PGI/82/WS/12). Paris, Unesco, 1982. 84 p.

24. Cook, Michael. *Guidelines for Curriculum Development in Records Management and the Administrations of Modern Archives: A RAMP Study* (PGI/82/WS/16). Paris, Unesco, 1982. 74 p. Available also in Spanish.

25. Unesco. Division of the General Information Programme. Second Expert Consultation on RAMP (RAMP II) Berlin (West), 9-11 June 1982. *Final Report* (PGI/82/WS/24). Paris, Unesco, 1982. 54 p. Available also in French and Spanish

26. Evans, Frank B. *Malaysia: Development of the Archives and Records Management Programme* (FMR/PGI/82/110). Paris, Unesco, 1982. 54 p.

27. Ricks, Artel. *Philippines: RAMP Pilot Project for the Establishment of a Regional Archives and Records Centre (Report No.2)* (FMR/PGI/82/161). Paris, Unesco, 1982. 24 p.

28. Evans, Frank B. *Writings on Archives Published by and with the Assistance of Unesco: A RAMP Study* (PGI-83/WS/5). Paris, Unesco, 1983. 33p.

29. Evans, Frank B. and Eric Ketelaar. *A Guide for Surveying Archival and and Records Management Systems and Services: A RAMP Study* (PGI-83/WS/6). Paris, Unesco, 1983. 30p. Available also in French and Spanish.

30. Rhoads, James B. *The Role of Archives and Records Management in National Information Systems: A RAMP Study* (PGI-83/WS/21). Paris, Unesco, 1983. 56p. Available also in French.

31. Kula, Sam. *The Archival Appraisal of Moving Images: A RAMP Study with Guidelines* (PGI-83/WS/18). Paris, Unesco, 1983. 130p.

32. Hildesheimer, Francoise. *Guidelines for the Preparation of General Guides to National Archives: A RAMP Study* (PGI-83/WS/9). Paris, Unesco, 1983. 67p.

33. Duchein, Michel. *Obstacles to the Access, Use and Transfer of Information from Archives: A RAMP Study* (PGI-83/WS/20). Paris, Unesco, 1983. 80p. Available also in French.